

# Grid Documentation

The Grid system is a comprehensive CSS-based layout framework that provides responsive, mobile-first grid classes for building flexible and adaptive layouts. Based on Bootstrap's flexbox grid system, it includes containers, rows, columns, and extensive flexbox utilities with breakpoint-specific behavior.

## How to use

The Grid system is implemented as CSS classes that can be applied directly to HTML elements. No JavaScript or Angular components are required.

## Basic Grid

Simple grid layout with equal-width columns.

```

<div class="grid-basic-demo">
  <h3>Basic Grid Layout</h3>

  <div class="demo-section">
    <h4>Equal Width Columns</h4>
    <p>
      Basic grid with equal-width columns using the <code>.col</code> class.
    </p>

    <div class="container">
      <div class="row">
        <div class="col">
          <div class="grid-item">
            <h5>Column 1</h5>
            <p>This column automatically sizes to fill available space.</p>
          </div>
        </div>
        <div class="col">
          <div class="grid-item">
            <h5>Column 2</h5>
            <p>This column also automatically sizes to fill available space.</p>
          </div>
        </div>
        <div class="col">
          <div class="grid-item">
            <h5>Column 3</h5>
            <p>All columns in this row have equal width.</p>
          </div>
        </div>
      </div>
    </div>
  </div>

  <div class="demo-section">
    <h4>Fixed Width Columns</h4>
    <p>Grid with specific column widths using numbered classes.</p>

    <div class="container">
      <div class="row">
        <div class="col-8">
          <div class="grid-item primary">
            <h5>Main Content (8/12)</h5>
            <p>This column takes up 8 out of 12 grid columns (66.67% width).</p>
          </div>
        </div>
        <div class="col-4">
          <div class="grid-item secondary">
            <h5>Sidebar (4/12)</h5>
            <p>This column takes up 4 out of 12 grid columns (33.33% width).</p>
          </div>
        </div>
      </div>
    </div>
  </div>

  <div class="demo-section">
    <h4>Mixed Column Types</h4>
    <p>Combining fixed-width and auto-width columns.</p>

    <div class="container">

```

```

<div class="row">
  <div class="col-6">
    <div class="grid-item">
      <h5>Fixed Width (6/12)</h5>
      <p>This column has a fixed width of 50%.</p>
    </div>
  </div>
  <div class="col">
    <div class="grid-item">
      <h5>Auto Width</h5>
      <p>This column automatically sizes to fill remaining space.</p>
    </div>
  </div>
  <div class="col-auto">
    <div class="grid-item compact">
      <h5>Auto Size</h5>
      <p>Fits content.</p>
    </div>
  </div>
</div>
</div>
</div>

<div class="demo-section">
  <h4>Container Types</h4>
  <p>Different container types for different layout needs.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Fixed Container</h5>
          <p>
            This uses <code>.container</code> with responsive max-widths and
            centered content.
          </p>
        </div>
      </div>
    </div>
  </div>

  <div class="container-fluid">
    <div class="row">
      <div class="col-12">
        <div class="grid-item fluid">
          <h5>Fluid Container</h5>
          <p>
            This uses <code>.container-fluid</code> for full-width layout
            spanning the entire viewport.
          </p>
        </div>
      </div>
    </div>
  </div>

  <div class="demo-section">
    <h4>No Gutters</h4>
    <p>Grid without gutters using the <code>.no-gutters</code> class.</p>
    <div class="container">

```

```

<div class="row no-gutters">
  <div class="col-4">
    <div class="grid-item no-gutter">
      <h5>No Gutter</h5>
      <p>This column has no spacing between it and adjacent columns.</p>
    </div>
  </div>
  <div class="col-4">
    <div class="grid-item no-gutter">
      <h5>No Gutter</h5>
      <p>Adjacent columns touch each other with no gap.</p>
    </div>
  </div>
  <div class="col-4">
    <div class="grid-item no-gutter">
      <h5>No Gutter</h5>
      <p>Perfect for seamless layouts and full-width designs.</p>
    </div>
  </div>
</div>
</div>
</div>

<div class="demo-info">
  <h4>Basic Grid Features</h4>
  <ul>
    <li>
      <strong>Container System:</strong> Fixed-width and fluid containers
    </li>
    <li>
      <strong>Row Wrapper:</strong> Flexbox rows with automatic gutter
      management
    </li>
    <li>
      <strong>Column Classes:</strong> Equal-width, fixed-width, and
      auto-width options
    </li>
    <li>
      <strong>No Gutters:</strong> Option to remove spacing between columns
    </li>
    <li>
      <strong>Responsive Foundation:</strong> Mobile-first approach with
      responsive breakpoints
    </li>
  </ul>
</div>
</div>

```

---

```
import { Component } from "@angular/core";
```

```

@Component({
  selector: "app-grid-basic",
  standalone: true,
  template: `
    <div class="grid-basic-demo">
      <h3>Basic Grid Layout</h3>
      <div class="demo-section">

```

#### <h4>Equal Width Columns</h4>

<p>

Basic grid with equal-width columns using the <code>.col</code> class.  
</p>

```
<div class="container">
  <div class="row">
    <div class="col">
      <div class="grid-item">
        <h5>Column 1</h5>
        <p>This column automatically sizes to fill available space.</p>
      </div>
    </div>
    <div class="col">
      <div class="grid-item">
        <h5>Column 2</h5>
        <p>
          This column also automatically sizes to fill available space.
        </p>
      </div>
    </div>
    <div class="col">
      <div class="grid-item">
        <h5>Column 3</h5>
        <p>All columns in this row have equal width.</p>
      </div>
    </div>
  </div>
</div>
```

```
<div class="demo-section">
  <h4>Fixed Width Columns</h4>
  <p>Grid with specific column widths using numbered classes.</p>
```

```
<div class="container">
  <div class="row">
    <div class="col-8">
      <div class="grid-item primary">
        <h5>Main Content (8/12)</h5>
        <p>
          This column takes up 8 out of 12 grid columns (66.67% width).
        </p>
      </div>
    </div>
    <div class="col-4">
      <div class="grid-item secondary">
        <h5>Sidebar (4/12)</h5>
        <p>
          This column takes up 4 out of 12 grid columns (33.33% width).
        </p>
      </div>
    </div>
  </div>
</div>
```

```
<div class="demo-section">
  <h4>Mixed Column Types</h4>
  <p>Combining fixed-width and auto-width columns.</p>
```

```

<div class="container">
  <div class="row">
    <div class="col-6">
      <div class="grid-item">
        <h5>Fixed Width (6/12)</h5>
        <p>This column has a fixed width of 50%.</p>
      </div>
    </div>
    <div class="col">
      <div class="grid-item">
        <h5>Auto Width</h5>
        <p>This column automatically sizes to fill remaining space.</p>
      </div>
    </div>
    <div class="col-auto">
      <div class="grid-item compact">
        <h5>Auto Size</h5>
        <p>Fits content.</p>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Container Types</h4>
  <p>Different container types for different layout needs.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Fixed Container</h5>
          <p>
            This uses <code>.container</code> with responsive max-widths
            and centered content.
          </p>
        </div>
      </div>
    </div>
  </div>

  <div class="container-fluid">
    <div class="row">
      <div class="col-12">
        <div class="grid-item fluid">
          <h5>Fluid Container</h5>
          <p>
            This uses <code>.container-fluid</code> for full-width layout
            spanning the entire viewport.
          </p>
        </div>
      </div>
    </div>
  </div>

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    <h4>No Gutters</h4>
    <p>Grid without gutters using the <code>.no-gutters</code> class.</p>

```

```

<div class="container">
  <div class="row no-gutters">
    <div class="col-4">
      <div class="grid-item no-gutter">
        <h5>No Gutter</h5>
        <p>
          This column has no spacing between it and adjacent columns.
        </p>
      </div>
    </div>
    <div class="col-4">
      <div class="grid-item no-gutter">
        <h5>No Gutter</h5>
        <p>Adjacent columns touch each other with no gap.</p>
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    </div>
    <div class="col-4">
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  </div>
</div>

<div class="demo-info">
  <h4>Basic Grid Features</h4>
  <ul>
    <li>
      <strong>Container System:</strong> Fixed-width and fluid containers
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      management
    </li>
    <li>
      <strong>Column Classes:</strong> Equal-width, fixed-width, and
      auto-width options
    </li>
    <li>
      <strong>No Gutters:</strong> Option to remove spacing between
      columns
    </li>
    <li>
      <strong>Responsive Foundation:</strong> Mobile-first approach with
      responsive breakpoints
    </li>
  </ul>
</div>
</div>
,
styles: [
  ,
  .grid-basic-demo {
    padding: 20px;
    max-width: 1200px;
    margin: 0 auto;
  }
  .grid-basic-demo h3 {

```

```
margin: 0 0 20px 0;
color: #333;
font-size: 24px;
font-weight: 600;
}

.demo-section {
margin-bottom: 40px;
padding: 20px;
border: 1px solid #e5e7eb;
border-radius: 8px;
background: #f9fafb;
}

.demo-section h4 {
margin: 0 0 12px 0;
color: #333;
font-size: 18px;
font-weight: 600;
}

.demo-section p {
margin: 0 0 20px 0;
color: #555;
line-height: 1.5;
}

.demo-section code {
background: #f1f3f4;
padding: 2px 6px;
border-radius: 4px;
font-family: monospace;
font-size: 14px;
}

.grid-item {
background: #fff;
border: 1px solid #e5e7eb;
border-radius: 6px;
padding: 20px;
height: 100%;
min-height: 120px;
display: flex;
flex-direction: column;
justify-content: center;
}

.grid-item h5 {
margin: 0 0 12px 0;
color: #333;
font-size: 16px;
font-weight: 600;
}

.grid-item p {
margin: 0;
color: #666;
line-height: 1.4;
}

.grid-item.primary {
```



```
    background: #e3f2fd;
    border-color: #2196f3;
}

.grid-item.secondary {
    background: #f3e5f5;
    border-color: #9c27b0;
}

.grid-item.compact {
    min-height: 80px;
    padding: 15px;
}

.grid-item.fluid {
    background: #e8f5e8;
    border-color: #4caf50;
}

.grid-item.no-gutter {
    border-radius: 0;
    border-left: none;
}

.grid-item.no-gutter:first-child {
    border-left: 1px solid #e5e7eb;
    border-top-left-radius: 6px;
    border-bottom-left-radius: 6px;
}

.grid-item.no-gutter:last-child {
    border-top-right-radius: 6px;
    border-bottom-right-radius: 6px;
}

.demo-info {
    margin-top: 40px;
    padding: 20px;
    background: #f8f9fa;
    border: 1px solid #dee2e6;
    border-radius: 8px;
}

.demo-info h4 {
    margin: 0 0 16px 0;
    color: #333;
    font-size: 18px;
    font-weight: 600;
}

.demo-info ul {
    margin: 0;
    padding-left: 20px;
    color: #555;
}

.demo-info li {
    margin-bottom: 8px;
    line-height: 1.4;
}
```

```
        .demo-info strong {  
            color: #333;  
        }  
    },  
    ],  
    })  
export class GridBasicComponent {  
    constructor() {  
        console.log("Grid Basic Component initialized");  
    }  
}
```

## Responsive Grid

Grid layout that adapts to different screen sizes using breakpoint-specific classes.

```

<div class="grid-responsive-demo">
  <h3>Responsive Grid Layout</h3>

  <div class="demo-section">
    <h4>Responsive Column Classes</h4>
    <p>
      Grid columns that adapt to different screen sizes using
      breakpoint-specific classes.
    </p>

    <div class="container">
      <div class="row">
        <div class="col-12 col-sm-6 col-md-4 col-lg-3">
          <div class="grid-item responsive">
            <h5>Responsive Column</h5>
            <p>
              <strong>Mobile:</strong> 12/12 (100%)<br />
              <strong>Small:</strong> 6/12 (50%)<br />
              <strong>Medium:</strong> 4/12 (33.33%)<br />
              <strong>Large:</strong> 3/12 (25%)
            </p>
          </div>
        </div>
        <div class="col-12 col-sm-6 col-md-4 col-lg-3">
          <div class="grid-item responsive">
            <h5>Responsive Column</h5>
            <p>
              <strong>Mobile:</strong> 12/12 (100%)<br />
              <strong>Small:</strong> 6/12 (50%)<br />
              <strong>Medium:</strong> 4/12 (33.33%)<br />
              <strong>Large:</strong> 3/12 (25%)
            </p>
          </div>
        </div>
        <div class="col-12 col-sm-6 col-md-4 col-lg-3">
          <div class="grid-item responsive">
            <h5>Responsive Column</h5>
            <p>
              <strong>Mobile:</strong> 12/12 (100%)<br />
              <strong>Small:</strong> 6/12 (50%)<br />
              <strong>Medium:</strong> 4/12 (33.33%)<br />
              <strong>Large:</strong> 3/12 (25%)
            </p>
          </div>
        </div>
        <div class="col-12 col-sm-6 col-md-4 col-lg-3">
          <div class="grid-item responsive">
            <h5>Responsive Column</h5>
            <p>
              <strong>Mobile:</strong> 12/12 (100%)<br />
              <strong>Small:</strong> 6/12 (50%)<br />
              <strong>Medium:</strong> 4/12 (33.33%)<br />
              <strong>Large:</strong> 3/12 (25%)
            </p>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>

```

```

<h4>Mobile-First Layout</h4>
<p>
  Layout that starts with mobile design and progressively enhances for
  larger screens.
</p>

<div class="container">
  <div class="row">
    <div class="col-12 col-md-8">
      <div class="grid-item primary">
        <h5>Main Content</h5>
        <p>
          <strong>Mobile:</strong> Full width (12/12)<br />
          <strong>Medium+:</strong> 8/12 width
        </p>
        <p>
          This column takes full width on mobile devices and 8/12 width on
          medium screens and larger.
        </p>
      </div>
    </div>
    <div class="col-12 col-md-4">
      <div class="grid-item secondary">
        <h5>Sidebar</h5>
        <p>
          <strong>Mobile:</strong> Full width (12/12)<br />
          <strong>Medium+:</strong> 4/12 width
        </p>
        <p>
          This sidebar appears below the main content on mobile and beside
          it on larger screens.
        </p>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Complex Responsive Layout</h4>
  <p>
    Advanced responsive layout with different column configurations at each
    breakpoint.
  </p>

  <div class="container">
    <div class="row">
      <div class="col-12 col-sm-6 col-lg-4">
        <div class="grid-item">
          <h5>Feature 1</h5>
          <p>
            <strong>Mobile:</strong> 12/12 (100%)<br />
            <strong>Small:</strong> 6/12 (50%)<br />
            <strong>Large:</strong> 4/12 (33.33%)
          </p>
        </div>
      </div>
      <div class="col-12 col-sm-6 col-lg-4">
        <div class="grid-item">
          <h5>Feature 2</h5>

```

```

        <p>
            <strong>Mobile:</strong> 12/12 (100%)<br />
            <strong>Small:</strong> 6/12 (50%)<br />
            <strong>Large:</strong> 4/12 (33.33%)
        </p>
    </div>
</div>
<div class="col-12 col-sm-12 col-lg-4">
    <div class="grid-item">
        <h5>Feature 3</h5>
        <p>
            <strong>Mobile:</strong> 12/12 (100%)<br />
            <strong>Small:</strong> 12/12 (100%)<br />
            <strong>Large:</strong> 4/12 (33.33%)
        </p>
    </div>
</div>
</div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Responsive Navigation</h4>
    <p>Navigation layout that adapts to different screen sizes.</p>

    <div class="container">
        <div class="row align-items-center">
            <div class="col-12 col-md-3">
                <div class="grid-item nav-brand">
                    <h5>Brand Logo</h5>
                    <p>Always full width on mobile, 3/12 on medium+</p>
                </div>
            </div>
            <div class="col-12 col-md-9">
                <div class="grid-item nav-menu">
                    <h5>Navigation Menu</h5>
                    <p>Full width on mobile, 9/12 on medium+</p>
                    <div class="nav-items">
                        <span class="nav-item">Home</span>
                        <span class="nav-item">About</span>
                        <span class="nav-item">Services</span>
                        <span class="nav-item">Contact</span>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>

<div class="demo-section">
    <h4>Responsive Form Layout</h4>
    <p>
        Form fields that stack on mobile and align side-by-side on larger screens.
    </p>

    <div class="container">
        <div class="row">
            <div class="col-12 col-sm-6">
                <div class="grid-item form-field">
                    <h5>First Name</h5>

```

```

        <p>Full width on mobile, 6/12 on small+</p>
    </div>
</div>
<div class="col-12 col-sm-6">
    <div class="grid-item form-field">
        <h5>Last Name</h5>
        <p>Full width on mobile, 6/12 on small+</p>
    </div>
</div>
<div class="col-12">
    <div class="grid-item form-field">
        <h5>Email Address</h5>
        <p>Always full width across all screen sizes</p>
    </div>
</div>
<div class="col-12 col-md-8">
    <div class="grid-item form-field">
        <h5>Message</h5>
        <p>Full width on mobile, 8/12 on medium+</p>
    </div>
</div>
<div class="col-12 col-md-4">
    <div class="grid-item form-field">
        <h5>Submit</h5>
        <p>Full width on mobile, 4/12 on medium+</p>
    </div>
</div>
</div>
</div>
</div>
</div>
<div class="demo-info">
    <h4>Responsive Grid Features</h4>
    <ul>
        <li>
            <strong>Mobile-First:</strong> Design for mobile devices first, then
            enhance for larger screens
        </li>
        <li>
            <strong>Breakpoint Classes:</strong> Use <code>.col-sm-*</code>,
            <code>.col-md-*</code>, <code>.col-lg-*</code>, <code>.col-xl-*</code>
        </li>
        <li>
            <strong>Progressive Enhancement:</strong> Start with basic layout, add
            complexity for larger screens
        </li>
        <li>
            <strong>Content Priority:</strong> Ensure important content is visible
            on all screen sizes
        </li>
        <li>
            <strong>Touch Optimization:</strong> Layouts are optimized for touch
            interaction on mobile
        </li>
    </ul>

    <h4>Breakpoint Reference</h4>
    <ul>
        <li>
            <strong>Extra Small (xs):</strong> 0px and up (default, no prefix)

```

```

        </li>
        <li><strong>Small (sm):</strong> 576px and up</li>
        <li><strong>Medium (md):</strong> 768px and up</li>
        <li><strong>Large (lg):</strong> 992px and up</li>
        <li><strong>Extra Large (xl):</strong> 1200px and up</li>
    </ul>
</div>
</div>

```

---

```

import { Component } from "@angular/core";

@Component({
  selector: "app-grid-responsive",
  standalone: true,
  template: `
    <div class="grid-responsive-demo">
      <h3>Responsive Grid Layout</h3>

      <div class="demo-section">
        <h4>Responsive Column Classes</h4>
        <p>
          Grid columns that adapt to different screen sizes using
          breakpoint-specific classes.
        </p>

        <div class="container">
          <div class="row">
            <div class="col-12 col-sm-6 col-md-4 col-lg-3">
              <div class="grid-item responsive">
                <h5>Responsive Column</h5>
                <p>
                  <strong>Mobile:</strong> 12/12 (100%)<br />
                  <strong>Small:</strong> 6/12 (50%)<br />
                  <strong>Medium:</strong> 4/12 (33.33%)<br />
                  <strong>Large:</strong> 3/12 (25%)
                </p>
              </div>
            </div>
            <div class="col-12 col-sm-6 col-md-4 col-lg-3">
              <div class="grid-item responsive">
                <h5>Responsive Column</h5>
                <p>
                  <strong>Mobile:</strong> 12/12 (100%)<br />
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                  <strong>Large:</strong> 3/12 (25%)
                </p>
              </div>
            </div>
            <div class="col-12 col-sm-6 col-md-4 col-lg-3">
              <div class="grid-item responsive">
                <h5>Responsive Column</h5>
                <p>
                  <strong>Mobile:</strong> 12/12 (100%)<br />
                  <strong>Small:</strong> 6/12 (50%)<br />
                  <strong>Medium:</strong> 4/12 (33.33%)<br />
                  <strong>Large:</strong> 3/12 (25%)
                </p>
              </div>
            </div>
          </div>
        </div>
      </div>
    </div>
  `
})

```

```

        </p>
    </div>
</div>
<div class="col-12 col-sm-6 col-md-4 col-lg-3">
    <div class="grid-item responsive">
        <h5>Responsive Column</h5>
        <p>
            <strong>Mobile:</strong> 12/12 (100%)<br />
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</div>
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<div class="demo-section">
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    <p>
        Layout that starts with mobile design and progressively enhances for
        larger screens.
    </p>

    <div class="container">
        <div class="row">
            <div class="col-12 col-md-8">
                <div class="grid-item primary">
                    <h5>Main Content</h5>
                    <p>
                        <strong>Mobile:</strong> Full width (12/12)<br />
                        <strong>Medium+:</strong> 8/12 width
                    </p>
                    <p>
                        This column takes full width on mobile devices and 8/12 width
                        on medium screens and larger.
                    </p>
                </div>
            </div>
            <div class="col-12 col-md-4">
                <div class="grid-item secondary">
                    <h5>Sidebar</h5>
                    <p>
                        <strong>Mobile:</strong> Full width (12/12)<br />
                        <strong>Medium+:</strong> 4/12 width
                    </p>
                    <p>
                        This sidebar appears below the main content on mobile and
                        beside it on larger screens.
                    </p>
                </div>
            </div>
        </div>
    </div>
</div>

<div class="demo-section">
    <h4>Complex Responsive Layout</h4>
    <p>

```



Advanced responsive layout with different column configurations at each breakpoint.

</p>

```
<div class="container">
  <div class="row">
    <div class="col-12 col-sm-6 col-lg-4">
      <div class="grid-item">
        <h5>Feature 1</h5>
        <p>
          <strong>Mobile:</strong> 12/12 (100%)<br />
          <strong>Small:</strong> 6/12 (50%)<br />
          <strong>Large:</strong> 4/12 (33.33%)
        </p>
      </div>
    </div>
    <div class="col-12 col-sm-6 col-lg-4">
      <div class="grid-item">
        <h5>Feature 2</h5>
        <p>
          <strong>Mobile:</strong> 12/12 (100%)<br />
          <strong>Small:</strong> 6/12 (50%)<br />
          <strong>Large:</strong> 4/12 (33.33%)
        </p>
      </div>
    </div>
    <div class="col-12 col-sm-12 col-lg-4">
      <div class="grid-item">
        <h5>Feature 3</h5>
        <p>
          <strong>Mobile:</strong> 12/12 (100%)<br />
          <strong>Small:</strong> 12/12 (100%)<br />
          <strong>Large:</strong> 4/12 (33.33%)
        </p>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Responsive Navigation</h4>
  <p>Navigation layout that adapts to different screen sizes.</p>

  <div class="container">
    <div class="row align-items-center">
      <div class="col-12 col-md-3">
        <div class="grid-item nav-brand">
          <h5>Brand Logo</h5>
          <p>Always full width on mobile, 3/12 on medium+</p>
        </div>
      </div>
      <div class="col-12 col-md-9">
        <div class="grid-item nav-menu">
          <h5>Navigation Menu</h5>
          <p>Full width on mobile, 9/12 on medium+</p>
          <div class="nav-items">
            <span class="nav-item">Home</span>
            <span class="nav-item">About</span>
            <span class="nav-item">Services</span>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
```

```

        <span class="nav-item">Contact</span>
    </div>
</div>
</div>
</div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Responsive Form Layout</h4>
    <p>
        Form fields that stack on mobile and align side-by-side on larger
        screens.
    </p>

    <div class="container">
        <div class="row">
            <div class="col-12 col-sm-6">
                <div class="grid-item form-field">
                    <h5>First Name</h5>
                    <p>Full width on mobile, 6/12 on small+</p>
                </div>
            </div>
            <div class="col-12 col-sm-6">
                <div class="grid-item form-field">
                    <h5>Last Name</h5>
                    <p>Full width on mobile, 6/12 on small+</p>
                </div>
            </div>
            <div class="col-12">
                <div class="grid-item form-field">
                    <h5>Email Address</h5>
                    <p>Always full width across all screen sizes</p>
                </div>
            </div>
            <div class="col-12 col-md-8">
                <div class="grid-item form-field">
                    <h5>Message</h5>
                    <p>Full width on mobile, 8/12 on medium+</p>
                </div>
            </div>
            <div class="col-12 col-md-4">
                <div class="grid-item form-field">
                    <h5>Submit</h5>
                    <p>Full width on mobile, 4/12 on medium+</p>
                </div>
            </div>
        </div>
    </div>
</div>
</div>

<div class="demo-info">
    <h4>Responsive Grid Features</h4>
    <ul>
        <li>
            <strong>Mobile-First:</strong> Design for mobile devices first, then
            enhance for larger screens
        </li>
        <li>
            <strong>Breakpoint Classes:</strong> Use <code>.col-sm-*</code>,

```

```

        <code>.col-md-*</code>, <code>.col-lg-*</code>,
        <code>.col-xl-*</code>
    </li>
    <li>
        <strong>Progressive Enhancement:</strong> Start with basic layout,
        add complexity for larger screens
    </li>
    <li>
        <strong>Content Priority:</strong> Ensure important content is
        visible on all screen sizes
    </li>
    <li>
        <strong>Touch Optimization:</strong> Layouts are optimized for touch
        interaction on mobile
    </li>
</ul>

<h4>Breakpoint Reference</h4>
<ul>
    <li>
        <strong>Extra Small (xs):</strong> 0px and up (default, no prefix)
    </li>
    <li><strong>Small (sm):</strong> 576px and up</li>
    <li><strong>Medium (md):</strong> 768px and up</li>
    <li><strong>Large (lg):</strong> 992px and up</li>
    <li><strong>Extra Large (xl):</strong> 1200px and up</li>
</ul>
</div>
</div>
\
,
styles: [
\
    .grid-responsive-demo {
        padding: 20px;
        max-width: 1200px;
        margin: 0 auto;
    }

    .grid-responsive-demo h3 {
        margin: 0 0 20px 0;
        color: #333;
        font-size: 24px;
        font-weight: 600;
    }

    .demo-section {
        margin-bottom: 40px;
        padding: 20px;
        border: 1px solid #e5e7eb;
        border-radius: 8px;
        background: #f9fafb;
    }

    .demo-section h4 {
        margin: 0 0 12px 0;
        color: #333;
        font-size: 18px;
        font-weight: 600;
    }
    .demo-section p {

```

```
margin: 0 0 20px 0;
color: #555;
line-height: 1.5;
}

.demo-section code {
  background: #f1f3f4;
  padding: 2px 6px;
  border-radius: 4px;
  font-family: monospace;
  font-size: 14px;
}

.grid-item {
  background: #fff;
  border: 1px solid #e5e7eb;
  border-radius: 6px;
  padding: 20px;
  height: 100%;
  min-height: 120px;
  display: flex;
  flex-direction: column;
  justify-content: center;
}

.grid-item h5 {
  margin: 0 0 12px 0;
  color: #333;
  font-size: 16px;
  font-weight: 600;
}

.grid-item p {
  margin: 0;
  color: #666;
  line-height: 1.4;
}

.grid-item.responsive {
  background: #fff3cd;
  border-color: #ffcc00;
}

.grid-item.primary {
  background: #e3f2fd;
  border-color: #bbdefb;
}

.grid-item.secondary {
  background: #f3e5f5;
  border-color: #ffe0b2;
}

.grid-item.nav-brand {
  background: #e8f5e8;
  border-color: #c8e6c9;
  min-height: 80px;
}

.grid-item.nav-menu {
```

```

        background: #fff8e1;
        border-color: #ff9800;
        min-height: 80px;
    }

    .nav-items {
        display: flex;
        gap: 15px;
        margin-top: 10px;
    }

    .nav-item {
        background: #ff9800;
        color: white;
        padding: 5px 10px;
        border-radius: 4px;
        font-size: 14px;
    }

    .grid-item.form-field {
        background: #f8f9fa;
        border-color: #6c757d;
        min-height: 100px;
    }

    .demo-info {
        margin-top: 40px;
        padding: 20px;
        background: #f8f9fa;
        border: 1px solid #dee2e6;
        border-radius: 8px;
    }

    .demo-info h4 {
        margin: 0 0 16px 0;
        color: #333;
        font-size: 18px;
        font-weight: 600;
    }

    .demo-info ul {
        margin: 0 0 20px 0;
        padding-left: 20px;
        color: #555;
    }

    .demo-info li {
        margin-bottom: 8px;
        line-height: 1.4;
    }

    .demo-info strong {
        color: #333;
    }
},
],
}))
export class GridResponsiveComponent {
    constructor() {
        console.log("Grid Responsive Component initialized");
    }
}

```

```
}  
}
```

## Flexbox Utilities

Advanced flexbox utilities for controlling layout direction, alignment, and spacing.

```

<div class="grid-flexbox-demo">
  <h3>Flexbox Utilities</h3>

  <div class="demo-section">
    <h4>Flex Direction</h4>
    <p>Control the direction of flex items using direction classes.</p>

    <div class="container">
      <div class="row">
        <div class="col-6">
          <div class="grid-item">
            <h5>Row Direction (Default)</h5>
            <p>Items flow horizontally from left to right.</p>
            <div class="flex-demo flex-row">
              <div class="flex-item">1</div>
              <div class="flex-item">2</div>
              <div class="flex-item">3</div>
            </div>
          </div>
        </div>
        <div class="col-6">
          <div class="grid-item">
            <h5>Column Direction</h5>
            <p>Items flow vertically from top to bottom.</p>
            <div class="flex-demo flex-column">
              <div class="flex-item">1</div>
              <div class="flex-item">2</div>
              <div class="flex-item">3</div>
            </div>
          </div>
        </div>
      </div>

      <div class="row">
        <div class="col-6">
          <div class="grid-item">
            <h5>Row Reverse</h5>
            <p>Items flow horizontally from right to left.</p>
            <div class="flex-demo flex-row-reverse">
              <div class="flex-item">1</div>
              <div class="flex-item">2</div>
              <div class="flex-item">3</div>
            </div>
          </div>
        </div>
        <div class="col-6">
          <div class="grid-item">
            <h5>Column Reverse</h5>
            <p>Items flow vertically from bottom to top.</p>
            <div class="flex-demo flex-column-reverse">
              <div class="flex-item">1</div>
              <div class="flex-item">2</div>
              <div class="flex-item">3</div>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
<div class="demo-section">

```

```

<h4>Flex Wrap</h4>
<p>Control how flex items wrap when they exceed the container width.</p>

<div class="container">
  <div class="row">
    <div class="col-6">
      <div class="grid-item">
        <h5>Wrap (Default)</h5>
        <p>Items wrap to the next line when needed.</p>
        <div class="flex-demo flex-wrap">
          <div class="flex-item wide">Item 1</div>
          <div class="flex-item wide">Item 2</div>
          <div class="flex-item wide">Item 3</div>
          <div class="flex-item wide">Item 4</div>
        </div>
      </div>
    </div>
    <div class="col-6">
      <div class="grid-item">
        <h5>No Wrap</h5>
        <p>Items stay on a single line and may overflow.</p>
        <div class="flex-demo flex-nowrap">
          <div class="flex-item wide">Item 1</div>
          <div class="flex-item wide">Item 2</div>
          <div class="flex-item wide">Item 3</div>
          <div class="flex-item wide">Item 4</div>
        </div>
      </div>
    </div>
  </div>

  <div class="row">
    <div class="col-12">
      <div class="grid-item">
        <h5>Wrap Reverse</h5>
        <p>Items wrap to the previous line in reverse order.</p>
        <div class="flex-demo flex-wrap-reverse">
          <div class="flex-item wide">Item 1</div>
          <div class="flex-item wide">Item 2</div>
          <div class="flex-item wide">Item 3</div>
          <div class="flex-item wide">Item 4</div>
          <div class="flex-item wide">Item 5</div>
          <div class="flex-item wide">Item 6</div>
        </div>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Justify Content</h4>
  <p>Control the alignment of flex items along the main axis.</p>

  <div class="container">
    <div class="row">
      <div class="col-4">
        <div class="grid-item">
          <h5>Start (Default)</h5>
          <p>Items align to the start of the container.</p>

```



```

        <div class="flex-demo justify-content-start">
            <div class="flex-item">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item">3</div>
        </div>
    </div>
</div>
<div class="col-4">
    <div class="grid-item">
        <h5>Center</h5>
        <p>Items align to the center of the container.</p>
        <div class="flex-demo justify-content-center">
            <div class="flex-item">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item">3</div>
        </div>
    </div>
</div>
<div class="col-4">
    <div class="grid-item">
        <h5>End</h5>
        <p>Items align to the end of the container.</p>
        <div class="flex-demo justify-content-end">
            <div class="flex-item">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item">3</div>
        </div>
    </div>
</div>
</div>

<div class="row">
    <div class="col-6">
        <div class="grid-item">
            <h5>Between</h5>
            <p>Items are distributed with space between them.</p>
            <div class="flex-demo justify-content-between">
                <div class="flex-item">1</div>
                <div class="flex-item">2</div>
                <div class="flex-item">3</div>
            </div>
        </div>
    </div>
    <div class="col-6">
        <div class="grid-item">
            <h5>Around</h5>
            <p>Items are distributed with equal space around them.</p>
            <div class="flex-demo justify-content-around">
                <div class="flex-item">1</div>
                <div class="flex-item">2</div>
                <div class="flex-item">3</div>
            </div>
        </div>
    </div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Align Items</h4>

```

<p>Control the alignment of flex items along the cross axis.</p>

```
<div class="container">
  <div class="row">
    <div class="col-4">
      <div class="grid-item">
        <h5>Start</h5>
        <p>Items align to the start of the cross axis.</p>
        <div class="flex-demo align-items-start">
          <div class="flex-item tall">1</div>
          <div class="flex-item">2</div>
          <div class="flex-item tall">3</div>
        </div>
      </div>
    </div>
    <div class="col-4">
      <div class="grid-item">
        <h5>Center</h5>
        <p>Items align to the center of the cross axis.</p>
        <div class="flex-demo align-items-center">
          <div class="flex-item tall">1</div>
          <div class="flex-item">2</div>
          <div class="flex-item tall">3</div>
        </div>
      </div>
    </div>
    <div class="col-4">
      <div class="grid-item">
        <h5>End</h5>
        <p>Items align to the end of the cross axis.</p>
        <div class="flex-demo align-items-end">
          <div class="flex-item tall">1</div>
          <div class="flex-item">2</div>
          <div class="flex-item tall">3</div>
        </div>
      </div>
    </div>
  </div>
  <div class="row">
    <div class="col-6">
      <div class="grid-item">
        <h5>Baseline</h5>
        <p>Items align to their baseline.</p>
        <div class="flex-demo align-items-baseline">
          <div class="flex-item baseline">1</div>
          <div class="flex-item">2</div>
          <div class="flex-item baseline">3</div>
        </div>
      </div>
    </div>
    <div class="col-6">
      <div class="grid-item">
        <h5>Stretch (Default)</h5>
        <p>Items stretch to fill the container height.</p>
        <div class="flex-demo align-items-stretch">
          <div class="flex-item">1</div>
          <div class="flex-item">2</div>
          <div class="flex-item">3</div>
        </div>
      </div>
    </div>
  </div>
</div>
```

```

        </div>
    </div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Align Self</h4>
    <p>Override the alignment for individual flex items.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Individual Item Alignment</h5>
                    <p>Each item can have its own alignment override.</p>
                    <div class="flex-demo">
                        <div class="flex-item tall align-self-start">Start</div>
                        <div class="flex-item align-self-center">Center</div>
                        <div class="flex-item tall align-self-end">End</div>
                        <div class="flex-item align-self-baseline">Baseline</div>
                        <div class="flex-item align-self-stretch">Stretch</div>
                    </div>
                </div>
            </div>
        </div>
    </div>

<div class="demo-section">
    <h4>Responsive Flexbox</h4>
    <p>Flexbox utilities with responsive breakpoint variants.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Responsive Flex Direction</h5>
                    <p>
                        Direction changes based on screen size: column on mobile, row on
                        larger screens.
                    </p>
                    <div class="flex-demo flex-column flex-md-row">
                        <div class="flex-item">Mobile: Column</div>
                        <div class="flex-item">Desktop: Row</div>
                        <div class="flex-item">Responsive!</div>
                    </div>
                </div>
            </div>
        </div>

        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Responsive Justify Content</h5>
                    <p>
                        Alignment changes based on screen size: center on mobile, between
                        on larger screens.
                    </p>
                </div>
            </div>
        </div>
    </div>

```

```

        class="flex-demo justify-content-center justify-content-md-between"
    >
        <div class="flex-item">Centered on mobile</div>
        <div class="flex-item">Between on desktop</div>
        <div class="flex-item">Responsive alignment!</div>
    </div>
</div>
</div>
</div>
</div>
</div>

<div class="demo-info">
    <h4>Flexbox Utility Features</h4>
    <ul>
        <li>
            <strong>Direction Control:</strong> Row, column, and reverse variants
        </li>
        <li><strong>Wrap Options:</strong> Wrap, nowrap, and wrap-reverse</li>
        <li>
            <strong>Justify Content:</strong> Start, end, center, between, around
        </li>
        <li>
            <strong>Align Items:</strong> Start, end, center, baseline, stretch
        </li>
        <li><strong>Align Self:</strong> Individual item alignment override</li>
        <li>
            <strong>Responsive Variants:</strong> All utilities available at each
            breakpoint
        </li>
    </ul>

    <h4>Common Use Cases</h4>
    <ul>
        <li>
            <strong>Navigation:</strong> Use justify-content-between for logo and
            menu
        </li>
        <li>
            <strong>Centered Content:</strong> Use justify-content-center and
            align-items-center
        </li>
        <li>
            <strong>Card Layouts:</strong> Use flex-wrap for responsive card grids
        </li>
        <li>
            <strong>Form Layouts:</strong> Use flex-column for stacked form fields
        </li>
        <li>
            <strong>Responsive Design:</strong> Combine with breakpoint classes for
            adaptive layouts
        </li>
    </ul>
</div>
</div>

```

---

```
import { Component } from "@angular/core";
```

```

@Component({
  selector: "app-grid-flexbox",
  standalone: true,
  template: `
    <div class="grid-flexbox-demo">
      <h3>Flexbox Utilities</h3>

      <div class="demo-section">
        <h4>Flex Direction</h4>
        <p>Control the direction of flex items using direction classes.</p>

        <div class="container">
          <div class="row">
            <div class="col-6">
              <div class="grid-item">
                <h5>Row Direction (Default)</h5>
                <p>Items flow horizontally from left to right.</p>
                <div class="flex-demo flex-row">
                  <div class="flex-item">1</div>
                  <div class="flex-item">2</div>
                  <div class="flex-item">3</div>
                </div>
              </div>
            </div>
            <div class="col-6">
              <div class="grid-item">
                <h5>Column Direction</h5>
                <p>Items flow vertically from top to bottom.</p>
                <div class="flex-demo flex-column">
                  <div class="flex-item">1</div>
                  <div class="flex-item">2</div>
                  <div class="flex-item">3</div>
                </div>
              </div>
            </div>
          </div>

          <div class="row">
            <div class="col-6">
              <div class="grid-item">
                <h5>Row Reverse</h5>
                <p>Items flow horizontally from right to left.</p>
                <div class="flex-demo flex-row-reverse">
                  <div class="flex-item">1</div>
                  <div class="flex-item">2</div>
                  <div class="flex-item">3</div>
                </div>
              </div>
            </div>
            <div class="col-6">
              <div class="grid-item">
                <h5>Column Reverse</h5>
                <p>Items flow vertically from bottom to top.</p>
                <div class="flex-demo flex-column-reverse">
                  <div class="flex-item">1</div>
                  <div class="flex-item">2</div>
                  <div class="flex-item">3</div>
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>
    </div>
  `
})

```

```

    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Flex Wrap</h4>
  <p>Control how flex items wrap when they exceed the container width.</p>

  <div class="container">
    <div class="row">
      <div class="col-6">
        <div class="grid-item">
          <h5>Wrap (Default)</h5>
          <p>Items wrap to the next line when needed.</p>
          <div class="flex-demo flex-wrap">
            <div class="flex-item wide">Item 1</div>
            <div class="flex-item wide">Item 2</div>
            <div class="flex-item wide">Item 3</div>
            <div class="flex-item wide">Item 4</div>
          </div>
        </div>
      </div>
      <div class="col-6">
        <div class="grid-item">
          <h5>No Wrap</h5>
          <p>Items stay on a single line and may overflow.</p>
          <div class="flex-demo flex-nowrap">
            <div class="flex-item wide">Item 1</div>
            <div class="flex-item wide">Item 2</div>
            <div class="flex-item wide">Item 3</div>
            <div class="flex-item wide">Item 4</div>
          </div>
        </div>
      </div>
    </div>

    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Wrap Reverse</h5>
          <p>Items wrap to the previous line in reverse order.</p>
          <div class="flex-demo flex-wrap-reverse">
            <div class="flex-item wide">Item 1</div>
            <div class="flex-item wide">Item 2</div>
            <div class="flex-item wide">Item 3</div>
            <div class="flex-item wide">Item 4</div>
            <div class="flex-item wide">Item 5</div>
            <div class="flex-item wide">Item 6</div>
          </div>
        </div>
      </div>
    </div>
  </div>

  <div class="demo-section">
    <h4>Justify Content</h4>
    <p>Control the alignment of flex items along the main axis.</p>

    <div class="container">

```

```

<div class="row">
  <div class="col-4">
    <div class="grid-item">
      <h5>Start (Default)</h5>
      <p>Items align to the start of the container.</p>
      <div class="flex-demo justify-content-start">
        <div class="flex-item">1</div>
        <div class="flex-item">2</div>
        <div class="flex-item">3</div>
      </div>
    </div>
  </div>
  <div class="col-4">
    <div class="grid-item">
      <h5>Center</h5>
      <p>Items align to the center of the container.</p>
      <div class="flex-demo justify-content-center">
        <div class="flex-item">1</div>
        <div class="flex-item">2</div>
        <div class="flex-item">3</div>
      </div>
    </div>
  </div>
  <div class="col-4">
    <div class="grid-item">
      <h5>End</h5>
      <p>Items align to the end of the container.</p>
      <div class="flex-demo justify-content-end">
        <div class="flex-item">1</div>
        <div class="flex-item">2</div>
        <div class="flex-item">3</div>
      </div>
    </div>
  </div>
</div>

<div class="row">
  <div class="col-6">
    <div class="grid-item">
      <h5>Between</h5>
      <p>Items are distributed with space between them.</p>
      <div class="flex-demo justify-content-between">
        <div class="flex-item">1</div>
        <div class="flex-item">2</div>
        <div class="flex-item">3</div>
      </div>
    </div>
  </div>
  <div class="col-6">
    <div class="grid-item">
      <h5>Around</h5>
      <p>Items are distributed with equal space around them.</p>
      <div class="flex-demo justify-content-around">
        <div class="flex-item">1</div>
        <div class="flex-item">2</div>
        <div class="flex-item">3</div>
      </div>
    </div>
  </div>
</div>

```

```

    </div>
</div>

<div class="demo-section">
  <h4>Align Items</h4>
  <p>Control the alignment of flex items along the cross axis.</p>

  <div class="container">
    <div class="row">
      <div class="col-4">
        <div class="grid-item">
          <h5>Start</h5>
          <p>Items align to the start of the cross axis.</p>
          <div class="flex-demo align-items-start">
            <div class="flex-item tall">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item tall">3</div>
          </div>
        </div>
      </div>
      <div class="col-4">
        <div class="grid-item">
          <h5>Center</h5>
          <p>Items align to the center of the cross axis.</p>
          <div class="flex-demo align-items-center">
            <div class="flex-item tall">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item tall">3</div>
          </div>
        </div>
      </div>
      <div class="col-4">
        <div class="grid-item">
          <h5>End</h5>
          <p>Items align to the end of the cross axis.</p>
          <div class="flex-demo align-items-end">
            <div class="flex-item tall">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item tall">3</div>
          </div>
        </div>
      </div>
    </div>

    <div class="row">
      <div class="col-6">
        <div class="grid-item">
          <h5>Baseline</h5>
          <p>Items align to their baseline.</p>
          <div class="flex-demo align-items-baseline">
            <div class="flex-item baseline">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item baseline">3</div>
          </div>
        </div>
      </div>
      <div class="col-6">
        <div class="grid-item">
          <h5>Stretch (Default)</h5>
          <p>Items stretch to fill the container height.</p>

```



```

        <div class="flex-demo align-items-stretch">
            <div class="flex-item">1</div>
            <div class="flex-item">2</div>
            <div class="flex-item">3</div>
        </div>
    </div>
</div>
</div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Align Self</h4>
    <p>Override the alignment for individual flex items.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Individual Item Alignment</h5>
                    <p>Each item can have its own alignment override.</p>
                    <div class="flex-demo">
                        <div class="flex-item tall align-self-start">Start</div>
                        <div class="flex-item align-self-center">Center</div>
                        <div class="flex-item tall align-self-end">End</div>
                        <div class="flex-item align-self-baseline">Baseline</div>
                        <div class="flex-item align-self-stretch">Stretch</div>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>

<div class="demo-section">
    <h4>Responsive Flexbox</h4>
    <p>Flexbox utilities with responsive breakpoint variants.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Responsive Flex Direction</h5>
                    <p>
                        Direction changes based on screen size: column on mobile, row
                        on larger screens.
                    </p>
                    <div class="flex-demo flex-column flex-md-row">
                        <div class="flex-item">Mobile: Column</div>
                        <div class="flex-item">Desktop: Row</div>
                        <div class="flex-item">Responsive!</div>
                    </div>
                </div>
            </div>
        </div>
    </div>

    <div class="row">
        <div class="col-12">
            <div class="grid-item">
                <h5>Responsive Justify Content</h5>

```

```

        <p>
            Alignment changes based on screen size: center on mobile,
            between on larger screens.
        </p>
        <div
            class="flex-demo justify-content-center justify-content-md-between"
        >
            <div class="flex-item">Centered on mobile</div>
            <div class="flex-item">Between on desktop</div>
            <div class="flex-item">Responsive alignment!</div>
        </div>
    </div>
</div>
</div>
</div>
</div>

<div class="demo-info">
    <h4>Flexbox Utility Features</h4>
    <ul>
        <li>
            <strong>Direction Control:</strong> Row, column, and reverse
            variants
        </li>
        <li><strong>Wrap Options:</strong> Wrap, nowrap, and wrap-reverse</li>
        <li>
            <strong>Justify Content:</strong> Start, end, center, between,
            around
        </li>
        <li>
            <strong>Align Items:</strong> Start, end, center, baseline, stretch
        </li>
        <li>
            <strong>Align Self:</strong> Individual item alignment override
        </li>
        <li>
            <strong>Responsive Variants:</strong> All utilities available at
            each breakpoint
        </li>
    </ul>

    <h4>Common Use Cases</h4>
    <ul>
        <li>
            <strong>Navigation:</strong> Use justify-content-between for logo
            and menu
        </li>
        <li>
            <strong>Centered Content:</strong> Use justify-content-center and
            align-items-center
        </li>
        <li>
            <strong>Card Layouts:</strong> Use flex-wrap for responsive card
            grids
        </li>
        <li>
            <strong>Form Layouts:</strong> Use flex-column for stacked form
            fields
        </li>
        <li>

```

```

        <strong>Responsive Design:</strong> Combine with breakpoint classes
        for adaptive layouts
    </li>
</ul>
</div>
</div>
\,
styles: [
\,
    .grid-flexbox-demo {
        padding: 20px;
        max-width: 1200px;
        margin: 0 auto;
    }

    .grid-flexbox-demo h3 {
        margin: 0 0 20px 0;
        color: #333;
        font-size: 24px;
        font-weight: 600;
    }

    .demo-section {
        margin-bottom: 40px;
        padding: 20px;
        border: 1px solid #e5e7eb;
        border-radius: 8px;
        background: #f9fafb;
    }

    .demo-section h4 {
        margin: 0 0 12px 0;
        color: #333;
        font-size: 18px;
        font-weight: 600;
    }

    .demo-section p {
        margin: 0 0 20px 0;
        color: #555;
        line-height: 1.5;
    }

    .grid-item {
        background: #fff;
        border: 1px solid #e5e7eb;
        border-radius: 6px;
        padding: 20px;
        height: 100%;
        min-height: 150px;
        display: flex;
        flex-direction: column;
    }

    .grid-item h5 {
        margin: 0 0 12px 0;
        color: #333;
        font-size: 16px;
        font-weight: 600;
    }

```

```
.grid-item p {
  margin: 0 0 15px 0;
  color: #666;
  line-height: 1.4;
}

.flex-demo {
  display: flex;
  background: #f8f9fa;
  border: 1px solid #dee2e6;
  border-radius: 4px;
  padding: 10px;
  min-height: 60px;
  gap: 10px;
}

.flex-item {
  background: #007bff;
  color: white;
  padding: 10px 15px;
  border-radius: 4px;
  display: flex;
  align-items: center;
  justify-content: center;
  font-weight: 600;
  min-width: 40px;
  min-height: 40px;
}

.flex-item.wide {
  min-width: 80px;
}

.flex-item.tall {
  min-height: 60px;
}

.flex-item.baseline {
  font-size: 18px;
  padding-top: 20px;
}

.demo-info {
  margin-top: 40px;
  padding: 20px;
  background: #f8f9fa;
  border: 1px solid #dee2e6;
  border-radius: 8px;
}

.demo-info h4 {
  margin: 0 0 16px 0;
  color: #333;
  font-size: 18px;
  font-weight: 600;
}

.demo-info ul {
  margin: 0 0 20px 0;
  padding-left: 20px;
}
```

```

        color: #555;
    }

    .demo-info li {
        margin-bottom: 8px;
        line-height: 1.4;
    }

    .demo-info strong {
        color: #333;
    }
},
],
}))
export class GridFlexboxComponent {
    constructor() {
        console.log("Grid Flexbox Component initialized");
    }
}

```

## Alignment

Flexbox alignment utilities for controlling how items are positioned within containers.

```

<div class="grid-alignment-demo">
  <h3>Alignment Utilities</h3>

  <div class="demo-section">
    <h4>Vertical Alignment</h4>
    <p>Control how items are aligned vertically within their containers.</p>

    <div class="container">
      <div class="row">
        <div class="col-4">
          <div class="grid-item">
            <h5>Align Items Start</h5>
            <p>Items align to the top of the container.</p>
            <div class="alignment-demo align-items-start">
              <div class="demo-item tall">Item 1</div>
              <div class="demo-item">Item 2</div>
              <div class="demo-item tall">Item 3</div>
            </div>
          </div>
        </div>
        <div class="col-4">
          <div class="grid-item">
            <h5>Align Items Center</h5>
            <p>Items align to the center of the container.</p>
            <div class="alignment-demo align-items-center">
              <div class="demo-item tall">Item 1</div>
              <div class="demo-item">Item 2</div>
              <div class="demo-item tall">Item 3</div>
            </div>
          </div>
        </div>
        <div class="col-4">
          <div class="grid-item">
            <h5>Align Items End</h5>
            <p>Items align to the bottom of the container.</p>
            <div class="alignment-demo align-items-end">
              <div class="demo-item tall">Item 1</div>
              <div class="demo-item">Item 2</div>
              <div class="demo-item tall">Item 3</div>
            </div>
          </div>
        </div>
      </div>

      <div class="row">
        <div class="col-6">
          <div class="grid-item">
            <h5>Align Items Baseline</h5>
            <p>Items align to their text baseline.</p>
            <div class="alignment-demo align-items-baseline">
              <div class="demo-item baseline">Large Text</div>
              <div class="demo-item">Normal Text</div>
              <div class="demo-item baseline">Large Text</div>
            </div>
          </div>
        </div>
        <div class="col-6">
          <div class="grid-item">
            <h5>Align Items Stretch</h5>
            <p>Items stretch to fill the container height (default).</p>

```

```

        <div class="alignment-demo align-items-stretch">
            <div class="demo-item">Item 1</div>
            <div class="demo-item">Item 2</div>
            <div class="demo-item">Item 3</div>
        </div>
    </div>
</div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Horizontal Alignment</h4>
    <p>
        Control how items are distributed horizontally within their containers.
    </p>

    <div class="container">
        <div class="row">
            <div class="col-4">
                <div class="grid-item">
                    <h5>Justify Content Start</h5>
                    <p>Items align to the left (default).</p>
                    <div class="alignment-demo justify-content-start">
                        <div class="demo-item">1</div>
                        <div class="demo-item">2</div>
                        <div class="demo-item">3</div>
                    </div>
                </div>
            </div>
            <div class="col-4">
                <div class="grid-item">
                    <h5>Justify Content Center</h5>
                    <p>Items align to the center.</p>
                    <div class="alignment-demo justify-content-center">
                        <div class="demo-item">1</div>
                        <div class="demo-item">2</div>
                        <div class="demo-item">3</div>
                    </div>
                </div>
            </div>
            <div class="col-4">
                <div class="grid-item">
                    <h5>Justify Content End</h5>
                    <p>Items align to the right.</p>
                    <div class="alignment-demo justify-content-end">
                        <div class="demo-item">1</div>
                        <div class="demo-item">2</div>
                        <div class="demo-item">3</div>
                    </div>
                </div>
            </div>
        </div>
    </div>

    <div class="row">
        <div class="col-6">
            <div class="grid-item">
                <h5>Justify Content Between</h5>
                <p>Items are distributed with space between them.</p>
                <div class="alignment-demo justify-content-between">

```

```

        <div class="demo-item">1</div>
        <div class="demo-item">2</div>
        <div class="demo-item">3</div>
    </div>
</div>
</div>
<div class="col-6">
    <div class="grid-item">
        <h5>Justify Content Around</h5>
        <p>Items are distributed with equal space around them.</p>
        <div class="alignment-demo justify-content-around">
            <div class="demo-item">1</div>
            <div class="demo-item">2</div>
            <div class="demo-item">3</div>
        </div>
    </div>
</div>
</div>
</div>
</div>
<div class="demo-section">
    <h4>Individual Item Alignment</h4>
    <p>Override alignment for specific items using align-self classes.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Align Self Overrides</h5>
                    <p>Each item can have its own alignment override.</p>
                    <div class="alignment-demo">
                        <div class="demo-item tall align-self-start">Start</div>
                        <div class="demo-item align-self-center">Center</div>
                        <div class="demo-item tall align-self-end">End</div>
                        <div class="demo-item align-self-baseline">Baseline</div>
                        <div class="demo-item align-self-stretch">Stretch</div>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>

<div class="demo-section">
    <h4>Content Alignment</h4>
    <p>Control alignment when flex items wrap to multiple lines.</p>

    <div class="container">
        <div class="row">
            <div class="col-4">
                <div class="grid-item">
                    <h5>Align Content Start</h5>
                    <p>Lines align to the start of the container.</p>
                    <div class="alignment-demo align-content-start">
                        <div class="demo-item wide">Item 1</div>
                        <div class="demo-item wide">Item 2</div>
                        <div class="demo-item wide">Item 3</div>
                        <div class="demo-item wide">Item 4</div>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>

```



```

    </div>
</div>
<div class="col-4">
  <div class="grid-item">
    <h5>Align Content Center</h5>
    <p>Lines align to the center of the container.</p>
    <div class="alignment-demo align-content-center">
      <div class="demo-item wide">Item 1</div>
      <div class="demo-item wide">Item 2</div>
      <div class="demo-item wide">Item 3</div>
      <div class="demo-item wide">Item 4</div>
    </div>
  </div>
</div>
<div class="col-4">
  <div class="grid-item">
    <h5>Align Content End</h5>
    <p>Lines align to the end of the container.</p>
    <div class="alignment-demo align-content-end">
      <div class="demo-item wide">Item 1</div>
      <div class="demo-item wide">Item 2</div>
      <div class="demo-item wide">Item 3</div>
      <div class="demo-item wide">Item 4</div>
    </div>
  </div>
</div>
</div>
<div class="row">
  <div class="col-6">
    <div class="grid-item">
      <h5>Align Content Between</h5>
      <p>Lines are distributed with space between them.</p>
      <div class="alignment-demo align-content-between">
        <div class="demo-item wide">Item 1</div>
        <div class="demo-item wide">Item 2</div>
        <div class="demo-item wide">Item 3</div>
        <div class="demo-item wide">Item 4</div>
      </div>
    </div>
  </div>
  <div class="col-6">
    <div class="grid-item">
      <h5>Align Content Around</h5>
      <p>Lines are distributed with equal space around them.</p>
      <div class="alignment-demo align-content-around">
        <div class="demo-item wide">Item 1</div>
        <div class="demo-item wide">Item 2</div>
        <div class="demo-item wide">Item 3</div>
        <div class="demo-item wide">Item 4</div>
      </div>
    </div>
  </div>
</div>
</div>
</div>
<div class="demo-section">
  <h4>Responsive Alignment</h4>
  <p>Alignment utilities with responsive breakpoint variants.</p>

```

```

<div class="container">
  <div class="row">
    <div class="col-12">
      <div class="grid-item">
        <h5>Responsive Vertical Alignment</h5>
        <p>
          Alignment changes based on screen size: start on mobile, center on
          larger screens.
        </p>
        <div class="alignment-demo align-items-start align-items-md-center">
          <div class="demo-item tall">Mobile: Top</div>
          <div class="demo-item">Desktop: Center</div>
          <div class="demo-item tall">Responsive!</div>
        </div>
      </div>
    </div>
  </div>

  <div class="row">
    <div class="col-12">
      <div class="grid-item">
        <h5>Responsive Horizontal Alignment</h5>
        <p>
          Alignment changes based on screen size: center on mobile, between
          on larger screens.
        </p>
        <div
          class="alignment-demo justify-content-center justify-content-md-between"
        >
          <div class="demo-item">Centered on mobile</div>
          <div class="demo-item">Between on desktop</div>
          <div class="demo-item">Responsive alignment!</div>
        </div>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Real-World Examples</h4>
  <p>Common alignment patterns used in web layouts.</p>

  <div class="container">
    <div class="row">
      <div class="col-6">
        <div class="grid-item">
          <h5>Navigation Bar</h5>
          <p>Logo on the left, menu items on the right.</p>
          <div
            class="alignment-demo justify-content-between align-items-center"
          >
            <div class="demo-item nav-logo">Logo</div>
            <div class="nav-menu">
              <span class="nav-item">Home</span>
              <span class="nav-item">About</span>
              <span class="nav-item">Contact</span>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>

```

```

</div>
<div class="col-6">
  <div class="grid-item">
    <h5>Centered Card</h5>
    <p>Content centered both horizontally and vertically.</p>
    <div
      class="alignment-demo justify-content-center align-items-center"
    >
      <div class="demo-item card-content">
        <h6>Centered Card</h6>
        <p>Perfectly centered content</p>
      </div>
    </div>
  </div>
</div>
</div>

<div class="row">
  <div class="col-12">
    <div class="grid-item">
      <h5>Footer Layout</h5>
      <p>Footer content distributed across the width.</p>
      <div
        class="alignment-demo justify-content-around align-items-start"
      >
        <div class="demo-item footer-section">
          <h6>Company</h6>
          <p>About Us<br />Careers<br />Contact</p>
        </div>
        <div class="demo-item footer-section">
          <h6>Products</h6>
          <p>Features<br />Pricing<br />Support</p>
        </div>
        <div class="demo-item footer-section">
          <h6>Resources</h6>
          <p>Blog<br />Documentation<br />Help</p>
        </div>
      </div>
    </div>
  </div>
</div>
</div>

<div class="demo-info">
  <h4>Alignment Utility Features</h4>
  <ul>
    <li>
      <strong>Vertical Alignment:</strong> Start, center, end, baseline,
      stretch
    </li>
    <li>
      <strong>Horizontal Alignment:</strong> Start, center, end, between,
      around
    </li>
    <li>
      <strong>Individual Override:</strong> Align-self classes for specific
      items
    </li>
    <li>

```

```

        <strong>Content Alignment:</strong> Control alignment of wrapped content
    </li>
    <li>
        <strong>Responsive Variants:</strong> All utilities available at each
        breakpoint
    </li>
    <li>
        <strong>Flexbox Based:</strong> Built on CSS Flexbox for modern browser
        support
    </li>
</ul>

<h4>Common Use Cases</h4>
<ul>
    <li>
        <strong>Navigation:</strong> Use justify-content-between for logo and
        menu
    </li>
    <li>
        <strong>Centered Content:</strong> Use justify-content-center and
        align-items-center
    </li>
    <li>
        <strong>Card Layouts:</strong> Use align-items-stretch for equal height
        cards
    </li>
    <li>
        <strong>Form Layouts:</strong> Use align-items-center for form field
        alignment
    </li>
    <li>
        <strong>Responsive Design:</strong> Combine with breakpoint classes for
        adaptive layouts
    </li>
</ul>
</div>
</div>

```

---

```

import { Component } from "@angular/core";

@Component({
  selector: "app-grid-alignment",
  standalone: true,
  template: `
    <div class="grid-alignment-demo">
      <h3>Alignment Utilities</h3>

      <div class="demo-section">
        <h4>Vertical Alignment</h4>
        <p>Control how items are aligned vertically within their containers.</p>

        <div class="container">
          <div class="row">
            <div class="col-4">
              <div class="grid-item">
                <h5>Align Items Start</h5>
                <p>Items align to the top of the container.</p>

```

```

        <div class="alignment-demo align-items-start">
            <div class="demo-item tall">Item 1</div>
            <div class="demo-item">Item 2</div>
            <div class="demo-item tall">Item 3</div>
        </div>
    </div>
</div>
<div class="col-4">
    <div class="grid-item">
        <h5>Align Items Center</h5>
        <p>Items align to the center of the container.</p>
        <div class="alignment-demo align-items-center">
            <div class="demo-item tall">Item 1</div>
            <div class="demo-item">Item 2</div>
            <div class="demo-item tall">Item 3</div>
        </div>
    </div>
</div>
<div class="col-4">
    <div class="grid-item">
        <h5>Align Items End</h5>
        <p>Items align to the bottom of the container.</p>
        <div class="alignment-demo align-items-end">
            <div class="demo-item tall">Item 1</div>
            <div class="demo-item">Item 2</div>
            <div class="demo-item tall">Item 3</div>
        </div>
    </div>
</div>
</div>

<div class="row">
    <div class="col-6">
        <div class="grid-item">
            <h5>Align Items Baseline</h5>
            <p>Items align to their text baseline.</p>
            <div class="alignment-demo align-items-baseline">
                <div class="demo-item baseline">Large Text</div>
                <div class="demo-item">Normal Text</div>
                <div class="demo-item baseline">Large Text</div>
            </div>
        </div>
    </div>
    <div class="col-6">
        <div class="grid-item">
            <h5>Align Items Stretch</h5>
            <p>Items stretch to fill the container height (default).</p>
            <div class="alignment-demo align-items-stretch">
                <div class="demo-item">Item 1</div>
                <div class="demo-item">Item 2</div>
                <div class="demo-item">Item 3</div>
            </div>
        </div>
    </div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Horizontal Alignment</h4>

```

```

<p>
  Control how items are distributed horizontally within their
  containers.
</p>

<div class="container">
  <div class="row">
    <div class="col-4">
      <div class="grid-item">
        <h5>Justify Content Start</h5>
        <p>Items align to the left (default).</p>
        <div class="alignment-demo justify-content-start">
          <div class="demo-item">1</div>
          <div class="demo-item">2</div>
          <div class="demo-item">3</div>
        </div>
      </div>
    </div>
    <div class="col-4">
      <div class="grid-item">
        <h5>Justify Content Center</h5>
        <p>Items align to the center.</p>
        <div class="alignment-demo justify-content-center">
          <div class="demo-item">1</div>
          <div class="demo-item">2</div>
          <div class="demo-item">3</div>
        </div>
      </div>
    </div>
    <div class="col-4">
      <div class="grid-item">
        <h5>Justify Content End</h5>
        <p>Items align to the right.</p>
        <div class="alignment-demo justify-content-end">
          <div class="demo-item">1</div>
          <div class="demo-item">2</div>
          <div class="demo-item">3</div>
        </div>
      </div>
    </div>
  </div>

  <div class="row">
    <div class="col-6">
      <div class="grid-item">
        <h5>Justify Content Between</h5>
        <p>Items are distributed with space between them.</p>
        <div class="alignment-demo justify-content-between">
          <div class="demo-item">1</div>
          <div class="demo-item">2</div>
          <div class="demo-item">3</div>
        </div>
      </div>
    </div>
    <div class="col-6">
      <div class="grid-item">
        <h5>Justify Content Around</h5>
        <p>Items are distributed with equal space around them.</p>
        <div class="alignment-demo justify-content-around">
          <div class="demo-item">1</div>

```

```

        <div class="demo-item">2</div>
        <div class="demo-item">3</div>
    </div>
</div>
</div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Individual Item Alignment</h4>
    <p>Override alignment for specific items using align-self classes.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Align Self Overrides</h5>
                    <p>Each item can have its own alignment override.</p>
                    <div class="alignment-demo">
                        <div class="demo-item tall align-self-start">Start</div>
                        <div class="demo-item align-self-center">Center</div>
                        <div class="demo-item tall align-self-end">End</div>
                        <div class="demo-item align-self-baseline">Baseline</div>
                        <div class="demo-item align-self-stretch">Stretch</div>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>

<div class="demo-section">
    <h4>Content Alignment</h4>
    <p>Control alignment when flex items wrap to multiple lines.</p>

    <div class="container">
        <div class="row">
            <div class="col-4">
                <div class="grid-item">
                    <h5>Align Content Start</h5>
                    <p>Lines align to the start of the container.</p>
                    <div class="alignment-demo align-content-start">
                        <div class="demo-item wide">Item 1</div>
                        <div class="demo-item wide">Item 2</div>
                        <div class="demo-item wide">Item 3</div>
                        <div class="demo-item wide">Item 4</div>
                    </div>
                </div>
            </div>
            <div class="col-4">
                <div class="grid-item">
                    <h5>Align Content Center</h5>
                    <p>Lines align to the center of the container.</p>
                    <div class="alignment-demo align-content-center">
                        <div class="demo-item wide">Item 1</div>
                        <div class="demo-item wide">Item 2</div>
                        <div class="demo-item wide">Item 3</div>
                        <div class="demo-item wide">Item 4</div>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>

```

```

        </div>
    </div>
    <div class="col-4">
        <div class="grid-item">
            <h5>Align Content End</h5>
            <p>Lines align to the end of the container.</p>
            <div class="alignment-demo align-content-end">
                <div class="demo-item wide">Item 1</div>
                <div class="demo-item wide">Item 2</div>
                <div class="demo-item wide">Item 3</div>
                <div class="demo-item wide">Item 4</div>
            </div>
        </div>
    </div>
</div>

<div class="row">
    <div class="col-6">
        <div class="grid-item">
            <h5>Align Content Between</h5>
            <p>Lines are distributed with space between them.</p>
            <div class="alignment-demo align-content-between">
                <div class="demo-item wide">Item 1</div>
                <div class="demo-item wide">Item 2</div>
                <div class="demo-item wide">Item 3</div>
                <div class="demo-item wide">Item 4</div>
            </div>
        </div>
    </div>
    <div class="col-6">
        <div class="grid-item">
            <h5>Align Content Around</h5>
            <p>Lines are distributed with equal space around them.</p>
            <div class="alignment-demo align-content-around">
                <div class="demo-item wide">Item 1</div>
                <div class="demo-item wide">Item 2</div>
                <div class="demo-item wide">Item 3</div>
                <div class="demo-item wide">Item 4</div>
            </div>
        </div>
    </div>
</div>
</div>

<div class="demo-section">
    <h4>Responsive Alignment</h4>
    <p>Alignment utilities with responsive breakpoint variants.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Responsive Vertical Alignment</h5>
                    <p>
                        Alignment changes based on screen size: start on mobile,
                        center on larger screens.
                    </p>
                    <div
                        class="alignment-demo align-items-start align-items-md-center"

```



```

        >
        <div class="demo-item tall">Mobile: Top</div>
        <div class="demo-item">Desktop: Center</div>
        <div class="demo-item tall">Responsive!</div>
    </div>
</div>
</div>
</div>

<div class="row">
    <div class="col-12">
        <div class="grid-item">
            <h5>Responsive Horizontal Alignment</h5>
            <p>
                Alignment changes based on screen size: center on mobile,
                between on larger screens.
            </p>
            <div
                class="alignment-demo justify-content-center justify-content-md-between"
            >
                <div class="demo-item">Centered on mobile</div>
                <div class="demo-item">Between on desktop</div>
                <div class="demo-item">Responsive alignment!</div>
            </div>
        </div>
    </div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Real-World Examples</h4>
    <p>Common alignment patterns used in web layouts.</p>

    <div class="container">
        <div class="row">
            <div class="col-6">
                <div class="grid-item">
                    <h5>Navigation Bar</h5>
                    <p>Logo on the left, menu items on the right.</p>
                    <div
                        class="alignment-demo justify-content-between align-items-center"
                    >
                        <div class="demo-item nav-logo">Logo</div>
                        <div class="nav-menu">
                            <span class="nav-item">Home</span>
                            <span class="nav-item">About</span>
                            <span class="nav-item">Contact</span>
                        </div>
                    </div>
                </div>
            </div>
            <div class="col-6">
                <div class="grid-item">
                    <h5>Centered Card</h5>
                    <p>Content centered both horizontally and vertically.</p>
                    <div
                        class="alignment-demo justify-content-center align-items-center"
                    >
                        <div class="demo-item card-content">

```

```

        <h6>Centered Card</h6>
        <p>Perfectly centered content</p>
    </div>
</div>
</div>
</div>
</div>
</div>

<div class="row">
    <div class="col-12">
        <div class="grid-item">
            <h5>Footer Layout</h5>
            <p>Footer content distributed across the width.</p>
            <div
                class="alignment-demo justify-content-around align-items-start"
            >
                <div class="demo-item footer-section">
                    <h6>Company</h6>
                    <p>About Us<br />Careers<br />Contact</p>
                </div>
                <div class="demo-item footer-section">
                    <h6>Products</h6>
                    <p>Features<br />Pricing<br />Support</p>
                </div>
                <div class="demo-item footer-section">
                    <h6>Resources</h6>
                    <p>Blog<br />Documentation<br />Help</p>
                </div>
            </div>
        </div>
    </div>
</div>
</div>

<div class="demo-info">
    <h4>Alignment Utility Features</h4>
    <ul>
        <li>
            <strong>Vertical Alignment:</strong> Start, center, end, baseline,
            stretch
        </li>
        <li>
            <strong>Horizontal Alignment:</strong> Start, center, end, between,
            around
        </li>
        <li>
            <strong>Individual Override:</strong> Align-self classes for
            specific items
        </li>
        <li>
            <strong>Content Alignment:</strong> Control alignment of wrapped
            content
        </li>
        <li>
            <strong>Responsive Variants:</strong> All utilities available at
            each breakpoint
        </li>
        <li>
            <strong>Flexbox Based:</strong> Built on CSS Flexbox for modern

```

```

        browser support
    </li>
</ul>

<h4>Common Use Cases</h4>
<ul>
    <li>
        <strong>Navigation:</strong> Use justify-content-between for logo
        and menu
    </li>
    <li>
        <strong>Centered Content:</strong> Use justify-content-center and
        align-items-center
    </li>
    <li>
        <strong>Card Layouts:</strong> Use align-items-stretch for equal
        height cards
    </li>
    <li>
        <strong>Form Layouts:</strong> Use align-items-center for form field
        alignment
    </li>
    <li>
        <strong>Responsive Design:</strong> Combine with breakpoint classes
        for adaptive layouts
    </li>
</ul>
</div>
</div>
\
,
styles: [
\
    .grid-alignment-demo {
        padding: 20px;
        max-width: 1200px;
        margin: 0 auto;
    }

    .grid-alignment-demo h3 {
        margin: 0 0 20px 0;
        color: #333;
        font-size: 24px;
        font-weight: 600;
    }

    .demo-section {
        margin-bottom: 40px;
        padding: 20px;
        border: 1px solid #e5e7eb;
        border-radius: 8px;
        background: #f9fafb;
    }

    .demo-section h4 {
        margin: 0 0 12px 0;
        color: #333;
        font-size: 18px;
        font-weight: 600;
    }
    .demo-section p {

```

```
margin: 0 0 20px 0;
color: #555;
line-height: 1.5;
}

.grid-item {
  background: #fff;
  border: 1px solid #e5e7eb;
  border-radius: 6px;
  padding: 20px;
  height: 100%;
  min-height: 150px;
  display: flex;
  flex-direction: column;
}

.grid-item h5 {
  margin: 0 0 12px 0;
  color: #333;
  font-size: 16px;
  font-weight: 600;
}

.grid-item p {
  margin: 0 0 15px 0;
  color: #666;
  line-height: 1.4;
}

.alignment-demo {
  display: flex;
  background: #f8f9fa;
  border: 1px solid #dee2e6;
  border-radius: 4px;
  padding: 10px;
  min-height: 80px;
  gap: 10px;
  flex-wrap: wrap;
}

.demo-item {
  background: #007bff;
  color: white;
  padding: 10px 15px;
  border-radius: 4px;
  display: flex;
  align-items: center;
  justify-content: center;
  font-weight: 600;
  min-width: 40px;
  min-height: 40px;
}

.demo-item.tall {
  min-height: 60px;
}

.demo-item.wide {
  min-width: 80px;
}
```

```
.demo-item.baseline {
  font-size: 18px;
  padding-top: 20px;
}

.demo-item.nav-logo {
  background: #28a745;
}

.nav-menu {
  display: flex;
  gap: 10px;
}

.nav-item {
  background: #6c757d;
  color: white;
  padding: 5px 10px;
  border-radius: 4px;
  font-size: 14px;
}

.demo-item.card-content {
  background: #17a2b8;
  flex-direction: column;
  text-align: center;
  min-width: 120px;
}

.demo-item.card-content h6 {
  margin: 0 0 5px 0;
  font-size: 14px;
}

.demo-item.card-content p {
  margin: 0;
  font-size: 12px;
  font-weight: normal;
}

.demo-item.footer-section {
  background: #6f42c1;
  flex-direction: column;
  text-align: center;
  min-width: 100px;
}

.demo-item.footer-section h6 {
  margin: 0 0 5px 0;
  font-size: 14px;
}

.demo-item.footer-section p {
  margin: 0;
  font-size: 12px;
  font-weight: normal;
}

.demo-info {
  margin-top: 40px;
}
```

```

        padding: 20px;
        background: #f8f9fa;
        border: 1px solid #dee2e6;
        border-radius: 8px;
    }

    .demo-info h4 {
        margin: 0 0 16px 0;
        color: #333;
        font-size: 18px;
        font-weight: 600;
    }

    .demo-info ul {
        margin: 0 0 20px 0;
        padding-left: 20px;
        color: #555;
    }

    .demo-info li {
        margin-bottom: 8px;
        line-height: 1.4;
    }

    .demo-info strong {
        color: #333;
    }
    `,
    ],
    })
export class GridAlignmentComponent {
    constructor() {
        console.log("Grid Alignment Component initialized");
    }
}

```

## Ordering

CSS order utilities for controlling the visual order of flex items.

```

<div class="grid-ordering-demo">
  <h3>Ordering Utilities</h3>

  <div class="demo-section">
    <h4>CSS Order Classes</h4>
    <p>Control the visual order of flex items using CSS order utilities.</p>

    <div class="container">
      <div class="row">
        <div class="col-12">
          <div class="grid-item">
            <h5>Default Order</h5>
            <p>Items appear in their natural DOM order.</p>
            <div class="ordering-demo">
              <div class="demo-item">1 (order: 0)</div>
              <div class="demo-item">2 (order: 0)</div>
              <div class="demo-item">3 (order: 0)</div>
            </div>
          </div>
        </div>
      </div>

      <div class="row">
        <div class="col-6">
          <div class="grid-item">
            <h5>Order First</h5>
            <p>Item appears first regardless of DOM order.</p>
            <div class="ordering-demo">
              <div class="demo-item">1 (order: 0)</div>
              <div class="demo-item order-first">2 (order: -1)</div>
              <div class="demo-item">3 (order: 0)</div>
            </div>
          </div>
        </div>
        <div class="col-6">
          <div class="grid-item">
            <h5>Order Last</h5>
            <p>Item appears last regardless of DOM order.</p>
            <div class="ordering-demo">
              <div class="demo-item">1 (order: 0)</div>
              <div class="demo-item">2 (order: 0)</div>
              <div class="demo-item order-last">3 (order: 13)</div>
            </div>
          </div>
        </div>
      </div>

      <div class="row">
        <div class="col-12">
          <div class="grid-item">
            <h5>Custom Order Values</h5>
            <p>Items with specific order values.</p>
            <div class="ordering-demo">
              <div class="demo-item order-3">1 (order: 3)</div>
              <div class="demo-item order-1">2 (order: 1)</div>
              <div class="demo-item order-2">3 (order: 2)</div>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>

```

```

    </div>
</div>

<div class="demo-section">
  <h4>Responsive Ordering</h4>
  <p>Order utilities with responsive breakpoint variants.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Responsive Order Changes</h5>
          <p>
            Order changes based on screen size: different order on mobile vs
            desktop.
          </p>
          <div class="ordering-demo">
            <div class="demo-item order-1 order-md-3">
              Mobile: 1st, Desktop: 3rd
            </div>
            <div class="demo-item order-2 order-md-1">
              Mobile: 2nd, Desktop: 1st
            </div>
            <div class="demo-item order-3 order-md-2">
              Mobile: 3rd, Desktop: 2nd
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>

  <div class="row">
    <div class="col-12">
      <div class="grid-item">
        <h5>Mobile-First Ordering</h5>
        <p>Content reorders for different screen sizes.</p>
        <div class="ordering-demo">
          <div class="demo-item order-2 order-sm-1 order-md-3">
            Adaptive Item
          </div>
          <div class="demo-item order-1 order-sm-2 order-md-1">
            Responsive Order
          </div>
          <div class="demo-item order-3 order-sm-3 order-md-2">
            Flexible Layout
          </div>
        </div>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Real-World Examples</h4>
  <p>Common ordering patterns used in web layouts.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">

```



```

<div class="grid-item">
  <h5>Content Priority Layout</h5>
  <p>
    Important content appears first on mobile, but sidebar appears
    first on desktop.
  </p>
  <div class="ordering-demo layout-example">
    <div class="demo-item main-content order-1 order-md-2">
      <h6>Main Content</h6>
      <p>Primary content area</p>
    </div>
    <div class="demo-item sidebar order-2 order-md-1">
      <h6>Sidebar</h6>
      <p>Navigation & widgets</p>
    </div>
  </div>
</div>
</div>
</div>

<div class="row">
  <div class="col-12">
    <div class="grid-item">
      <h5>Feature Grid Reordering</h5>
      <p>
        Feature order changes based on screen size for optimal user
        experience.
      </p>
      <div class="ordering-demo layout-example">
        <div class="demo-item feature order-1 order-lg-3">
          <h6>Feature 1</h6>
          <p>Mobile priority</p>
        </div>
        <div class="demo-item feature order-2 order-lg-1">
          <h6>Feature 2</h6>
          <p>Desktop priority</p>
        </div>
        <div class="demo-item feature order-3 order-lg-2">
          <h6>Feature 3</h6>
          <p>Balanced priority</p>
        </div>
      </div>
    </div>
  </div>
</div>
</div>
</div>

<div class="demo-section">
  <h4>Navigation Reordering</h4>
  <p>Navigation elements that reorder based on screen size.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Responsive Navigation</h5>
          <p>Logo, menu, and actions reorder for different screen sizes.</p>
          <div class="ordering-demo nav-example">
            <div class="demo-item nav-logo order-1 order-md-1">

```

```
<h6>Logo</h6>  
    <p>Brand identity</p>  
  </div>  
  <div class="demo-item nav-menu order-3 order-md-2">  
    <h6>Menu</h6>  
    <p>Navigation links</p>  
  </div>  
  <div class="demo-item nav-actions order-2 order-md-3">  
    <h6>Actions</h6>  
    <p>Buttons & search</p>  
  </div>  
</div>  
</div>  
</div>  
</div>  
</div>  
  
<div class="demo-section">  
  <h4>Form Layout Reordering</h4>  
  <p>Form elements that reorder for better mobile experience.</p>  
  
  <div class="container">  
    <div class="row">  
      <div class="col-12">  
        <div class="grid-item">  
          <h5>Responsive Form</h5>  
          <p>Form fields reorder based on importance and screen size.</p>  
          <div class="ordering-demo form-example">  
            <div class="demo-item form-field order-1 order-md-2">  
              <h6>Email</h6>  
              <p>Primary field</p>  
            </div>  
            <div class="demo-item form-field order-2 order-md-1">  
              <h6>Name</h6>  
              <p>Secondary field</p>  
            </div>  
            <div class="demo-item form-field order-3 order-md-3">  
              <h6>Message</h6>  
              <p>Text area</p>  
            </div>  
          </div>  
        </div>  
      </div>  
    </div>  
  </div>  
  
<div class="demo-info">  
  <h4>Ordering Utility Features</h4>  
  <ul>  
    <li><strong>CSS Order:</strong> Control visual order independent of DOM  
structure</li>  
    <li><strong>Order Classes:</strong> order-first, order-last, order-1,  
order-2, order-3</li>  
    <li>
```

- Responsive Variants:** All order utilities available at each breakpoint
- Mobile-First:** Design for mobile, then enhance for larger screens
- Content Priority:** Reorder content based on screen size and importance
- Accessibility:** Maintain logical tab order regardless of visual order

#### Common Use Cases

- Content Priority:** Show most important content first on mobile
- Navigation:** Reorder logo, menu, and actions for different screen sizes
- Form Layouts:** Prioritize form fields based on screen size
- Feature Grids:** Reorder features for optimal user experience
- Sidebar Layouts:** Move sidebar to top on mobile, side on desktop

#### Best Practices

- Logical Flow:** Ensure content flows logically regardless of visual order
- Tab Order:** Maintain logical tab order for keyboard navigation
- Screen Readers:** Content should make sense when read in DOM order
- Progressive Enhancement:** Start with basic order, enhance for larger screens

```

        <strong>Testing:</strong> Test ordering on various screen sizes and
        devices
    </li>
</ul>
</div>
</div>

```

---

```

import { Component } from "@angular/core";

@Component({
  selector: "app-grid-ordering",
  standalone: true,
  template: `
    <div class="grid-ordering-demo">
      <h3>Ordering Utilities</h3>

      <div class="demo-section">
        <h4>CSS Order Classes</h4>
        <p>Control the visual order of flex items using CSS order utilities.</p>

        <div class="container">
          <div class="row">
            <div class="col-12">
              <div class="grid-item">
                <h5>Default Order</h5>
                <p>Items appear in their natural DOM order.</p>
                <div class="ordering-demo">
                  <div class="demo-item">1 (order: 0)</div>
                  <div class="demo-item">2 (order: 0)</div>
                  <div class="demo-item">3 (order: 0)</div>
                </div>
              </div>
            </div>
          </div>

          <div class="row">
            <div class="col-6">
              <div class="grid-item">
                <h5>Order First</h5>
                <p>Item appears first regardless of DOM order.</p>
                <div class="ordering-demo">
                  <div class="demo-item">1 (order: 0)</div>
                  <div class="demo-item order-first">2 (order: -1)</div>
                  <div class="demo-item">3 (order: 0)</div>
                </div>
              </div>
            </div>
            <div class="col-6">
              <div class="grid-item">
                <h5>Order Last</h5>
                <p>Item appears last regardless of DOM order.</p>
                <div class="ordering-demo">
                  <div class="demo-item">1 (order: 0)</div>
                  <div class="demo-item">2 (order: 0)</div>
                  <div class="demo-item order-last">3 (order: 13)</div>
                </div>
              </div>
            </div>
          </div>
        </div>
      </div>
    </div>
  `
})

```

```

    </div>
</div>

<div class="row">
  <div class="col-12">
    <div class="grid-item">
      <h5>Custom Order Values</h5>
      <p>Items with specific order values.</p>
      <div class="ordering-demo">
        <div class="demo-item order-3">1 (order: 3)</div>
        <div class="demo-item order-1">2 (order: 1)</div>
        <div class="demo-item order-2">3 (order: 2)</div>
      </div>
    </div>
  </div>
</div>
</div>
</div>

<div class="demo-section">
  <h4>Responsive Ordering</h4>
  <p>Order utilities with responsive breakpoint variants.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Responsive Order Changes</h5>
          <p>
            Order changes based on screen size: different order on mobile
            vs desktop.
          </p>
          <div class="ordering-demo">
            <div class="demo-item order-1 order-md-3">
              Mobile: 1st, Desktop: 3rd
            </div>
            <div class="demo-item order-2 order-md-1">
              Mobile: 2nd, Desktop: 1st
            </div>
            <div class="demo-item order-3 order-md-2">
              Mobile: 3rd, Desktop: 2nd
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>

  <div class="row">
    <div class="col-12">
      <div class="grid-item">
        <h5>Mobile-First Ordering</h5>
        <p>Content reorders for different screen sizes.</p>
        <div class="ordering-demo">
          <div class="demo-item order-2 order-sm-1 order-md-3">
            Adaptive Item
          </div>
          <div class="demo-item order-1 order-sm-2 order-md-1">
            Responsive Order
          </div>
          <div class="demo-item order-3 order-sm-3 order-md-2">

```

```

        Flexible Layout
    </div>
</div>
</div>
</div>
</div>
</div>
</div>

<div class="demo-section">
    <h4>Real-World Examples</h4>
    <p>Common ordering patterns used in web layouts.</p>

    <div class="container">
        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Content Priority Layout</h5>
                    <p>
                        Important content appears first on mobile, but sidebar appears
                        first on desktop.
                    </p>
                    <div class="ordering-demo layout-example">
                        <div class="demo-item main-content order-1 order-md-2">
                            <h6>Main Content</h6>
                            <p>Primary content area</p>
                        </div>
                        <div class="demo-item sidebar order-2 order-md-1">
                            <h6>Sidebar</h6>
                            <p>Navigation & widgets</p>
                        </div>
                    </div>
                </div>
            </div>
        </div>

        <div class="row">
            <div class="col-12">
                <div class="grid-item">
                    <h5>Feature Grid Reordering</h5>
                    <p>
                        Feature order changes based on screen size for optimal user
                        experience.
                    </p>
                    <div class="ordering-demo layout-example">
                        <div class="demo-item feature order-1 order-lg-3">
                            <h6>Feature 1</h6>
                            <p>Mobile priority</p>
                        </div>
                        <div class="demo-item feature order-2 order-lg-1">
                            <h6>Feature 2</h6>
                            <p>Desktop priority</p>
                        </div>
                        <div class="demo-item feature order-3 order-lg-2">
                            <h6>Feature 3</h6>
                            <p>Balanced priority</p>
                        </div>
                    </div>
                </div>
            </div>
        </div>
    </div>

```

```

    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Navigation Reordering</h4>
  <p>Navigation elements that reorder based on screen size.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Responsive Navigation</h5>
          <p>
            Logo, menu, and actions reorder for different screen sizes.
          </p>
          <div class="ordering-demo nav-example">
            <div class="demo-item nav-logo order-1 order-md-1">
              <h6>Logo</h6>
              <p>Brand identity</p>
            </div>
            <div class="demo-item nav-menu order-3 order-md-2">
              <h6>Menu</h6>
              <p>Navigation links</p>
            </div>
            <div class="demo-item nav-actions order-2 order-md-3">
              <h6>Actions</h6>
              <p>Buttons & search</p>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>

<div class="demo-section">
  <h4>Form Layout Reordering</h4>
  <p>Form elements that reorder for better mobile experience.</p>

  <div class="container">
    <div class="row">
      <div class="col-12">
        <div class="grid-item">
          <h5>Responsive Form</h5>
          <p>Form fields reorder based on importance and screen size.</p>
          <div class="ordering-demo form-example">
            <div class="demo-item form-field order-1 order-md-2">
              <h6>Email</h6>
              <p>Primary field</p>
            </div>
            <div class="demo-item form-field order-2 order-md-1">
              <h6>Name</h6>
              <p>Secondary field</p>
            </div>
            <div class="demo-item form-field order-3 order-md-3">
              <h6>Message</h6>
              <p>Text area</p>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>

```

```

        </div>
    </div>
</div>
</div>
</div>

<div class="demo-info">
    <h4>Ordering Utility Features</h4>
    <ul>
        <li>
            <strong>CSS Order:</strong> Control visual order independent of DOM
            structure
        </li>
        <li>
            <strong>Order Classes:</strong> order-first, order-last, order-1,
            order-2, order-3
        </li>
        <li>
            <strong>Responsive Variants:</strong> All order utilities available
            at each breakpoint
        </li>
        <li>
            <strong>Mobile-First:</strong> Design for mobile, then enhance for
            larger screens
        </li>
        <li>
            <strong>Content Priority:</strong> Reorder content based on screen
            size and importance
        </li>
        <li>
            <strong>Accessibility:</strong> Maintain logical tab order
            regardless of visual order
        </li>
    </ul>

    <h4>Common Use Cases</h4>
    <ul>
        <li>
            <strong>Content Priority:</strong> Show most important content first
            on mobile
        </li>
        <li>
            <strong>Navigation:</strong> Reorder logo, menu, and actions for
            different screen sizes
        </li>
        <li>
            <strong>Form Layouts:</strong> Prioritize form fields based on
            screen size
        </li>
        <li>
            <strong>Feature Grids:</strong> Reorder features for optimal user
            experience
        </li>
        <li>
            <strong>Sidebar Layouts:</strong> Move sidebar to top on mobile,
            side on desktop
        </li>
    </ul>

    <h4>Best Practices</h4>

```



```

<ul>
  <li>
    <strong>Logical Flow:</strong> Ensure content flows logically
    regardless of visual order
  </li>
  <li>
    <strong>Tab Order:</strong> Maintain logical tab order for keyboard
    navigation
  </li>
  <li>
    <strong>Screen Readers:</strong> Content should make sense when read
    in DOM order
  </li>
  <li>
    <strong>Progressive Enhancement:</strong> Start with basic order,
    enhance for larger screens
  </li>
  <li>
    <strong>Testing:</strong> Test ordering on various screen sizes and
    devices
  </li>
</ul>
</div>
</div>
\,
styles: [
\,
  .grid-ordering-demo {
    padding: 20px;
    max-width: 1200px;
    margin: 0 auto;
  }

  .grid-ordering-demo h3 {
    margin: 0 0 20px 0;
    color: #333;
    font-size: 24px;
    font-weight: 600;
  }

  .demo-section {
    margin-bottom: 40px;
    padding: 20px;
    border: 1px solid #e5e7eb;
    border-radius: 8px;
    background: #f9fafb;
  }

  .demo-section h4 {
    margin: 0 0 12px 0;
    color: #333;
    font-size: 18px;
    font-weight: 600;
  }

  .demo-section p {
    margin: 0 0 20px 0;
    color: #555;
    line-height: 1.5;
  }

```

```
.grid-item {
  background: #fff;
  border: 1px solid #e5e7eb;
  border-radius: 6px;
  padding: 20px;
  height: 100%;
  min-height: 150px;
  display: flex;
  flex-direction: column;
}
```

```
.grid-item h5 {
  margin: 0 0 12px 0;
  color: #333;
  font-size: 16px;
  font-weight: 600;
}
```

```
.grid-item p {
  margin: 0 0 15px 0;
  color: #666;
  line-height: 1.4;
}
```

```
.ordering-demo {
  display: flex;
  background: #f8f9fa;
  border: 1px solid #dee2e6;
  border-radius: 4px;
  padding: 10px;
  min-height: 80px;
  gap: 10px;
  flex-wrap: wrap;
}
```

```
.demo-item {
  background: #007bff;
  color: white;
  padding: 10px 15px;
  border-radius: 4px;
  display: flex;
  align-items: center;
  justify-content: center;
  font-weight: 600;
  min-width: 80px;
  min-height: 40px;
  text-align: center;
  font-size: 14px;
}
```

```
.demo-item h6 {
  margin: 0 0 5px 0;
  font-size: 14px;
  font-weight: 600;
}
```

```
.demo-item p {
  margin: 0;
  font-size: 12px;
  font-weight: normal;
}
```

```
    line-height: 1.2;
}

.demo-item.main-content {
    background: #28a745;
    flex-direction: column;
    min-width: 120px;
}

.demo-item.sidebar {
    background: #6c757d;
    flex-direction: column;
    min-width: 100px;
}

.demo-item.feature {
    background: #17a2b8;
    flex-direction: column;
    min-width: 100px;
}

.demo-item.nav-logo {
    background: #fd7e14;
    flex-direction: column;
    min-width: 80px;
}

.demo-item.nav-menu {
    background: #6f42c1;
    flex-direction: column;
    min-width: 100px;
}

.demo-item.nav-actions {
    background: #e83e8c;
    flex-direction: column;
    min-width: 100px;
}

.demo-item.form-field {
    background: #20c997;
    flex-direction: column;
    min-width: 100px;
}

.demo-info {
    margin-top: 40px;
    padding: 20px;
    background: #f8f9fa;
    border: 1px solid #dee2e6;
    border-radius: 8px;
}

.demo-info h4 {
    margin: 0 0 16px 0;
    color: #333;
    font-size: 18px;
    font-weight: 600;
}

.demo-info ul {
```

```

        margin: 0 0 20px 0;
        padding-left: 20px;
        color: #555;
    }

    .demo-info li {
        margin-bottom: 8px;
        line-height: 1.4;
    }

    .demo-info strong {
        color: #333;
    }
},
],
}))
export class GridOrderingComponent {
    constructor() {
        console.log("Grid Ordering Component initialized");
    }
}

```

## Features

### Container System

- Fixed Container : .container with responsive max-widths
- Fluid Container : .container-fluid for full-width layouts
- Responsive Breakpoints : Automatic width adjustments at different screen sizes
- Consistent Padding : 15px horizontal padding on all containers

### Row System

- Flexbox Rows : .row creates flex containers with wrap enabled
- Negative Margins : Automatic gutter compensation with -15px margins
- No Gutters : .no-gutters class removes spacing between columns
- Responsive Behavior : Consistent behavior across all breakpoints

### Column System

- 12-Column Grid : Standard 12-column layout system
- Responsive Classes : Breakpoint-specific column classes (sm, md, lg, xl)
- Auto Columns : .col and .col-auto for flexible sizing
- Fixed Widths : Classes from .col-1 to .col-12 for precise control

### Breakpoint System

- Extra Small (xs) : Default, no prefix (0px and up)
- Small (sm) : 576px and up
- Medium (md) : 768px and up
- Large (lg) : 992px and up
- Extra Large (xl) : 1200px and up

## Flexbox Utilities

- Direction : Row, column, and reverse variants
- Wrap : Wrap, nowrap, and wrap-reverse options
- Justify Content : Start, end, center, between, around
- Align Items : Start, end, center, baseline, stretch
- Align Content : Start, end, center, between, around, stretch
- Align Self : Auto, start, end, center, baseline, stretch

## Positioning Utilities

- Offsets : .offset-\* classes for column positioning
- Push/Pull : .push-\* and .pull-\* for reordering
- Order : .order-\* classes for flex item ordering
- Responsive Variants : All utilities available at each breakpoint

## CSS Classes

### Container Classes

Class	Description
.container	Fixed-width container with responsive max-widths
.container-fluid	Full-width container spanning the entire viewport

### Row Classes

Class	Description
.row	Flexbox row container with wrap enabled
.no-gutters	Removes gutters from row and its columns

## Column Classes

### Basic Columns

Class	Width	Description
.col	Auto	Equal-width column that grows to fill space
.col-auto	Auto	Column sized to content
.col-1	8.333%	1/12 width column
.col-2	16.667%	2/12 width column
.col-3	25%	3/12 width column

Class	Width	Description
.col-4	33.333%	4/12 width column
.col-5	41.667%	5/12 width column
.col-6	50%	6/12 width column
.col-7	58.333%	7/12 width column
.col-8	66.667%	8/12 width column
.col-9	75%	9/12 width column
.col-10	83.333%	10/12 width column
.col-11	91.667%	11/12 width column
.col-12	100%	Full-width column

## Responsive Columns

Class	Breakpoint	Description
.col-sm-*	≥576px	Small screen columns
.col-md-*	≥768px	Medium screen columns
.col-lg-*	≥992px	Large screen columns
.col-xl-*	≥1200px	Extra large screen columns

## Flexbox Direction Classes

Class	Description
.flex-row	Horizontal direction (default)
.flex-column	Vertical direction
.flex-row-reverse	Horizontal direction, reversed
.flex-column-reverse	Vertical direction, reversed

## Flexbox Wrap Classes

Class	Description
.flex-wrap	Allow items to wrap to next line
.flex-nowrap	Prevent wrapping (default)
.flex-wrap-reverse	Wrap items in reverse order

## Justify Content Classes

Class	Description
.justify-content-start	Align items to start
.justify-content-end	Align items to end
.justify-content-center	Center items
.justify-content-between	Space items evenly
.justify-content-around	Space items with equal margins

## Align Items Classes

Class	Description
.align-items-start	Align items to start
.align-items-end	Align items to end
.align-items-center	Center items
.align-items-baseline	Align items to baseline
.align-items-stretch	Stretch items (default)

## Align Content Classes

Class	Description
.align-content-start	Align content to start
.align-content-end	Align content to end
.align-content-center	Center content
.align-content-between	Space content evenly
.align-content-around	Space content with equal margins
.align-content-stretch	Stretch content (default)

## Align Self Classes

Class	Description
.align-self-auto	Auto alignment (default)
.align-self-start	Align self to start
.align-self-end	Align self to end
.align-self-center	Center self
.align-self-baseline	Align self to baseline
.align-self-stretch	Stretch self

## Order Classes

Class	Description
.order-first	Order: -1
.order-last	Order: 13
.order-1	Order: 1
.order-2	Order: 2
.order-3	Order: 3

## Offset Classes

Class	Margin Left	Description
.offset-1	8.333%	Offset by 1 column
.offset-2	16.667%	Offset by 2 columns
.offset-3	25%	Offset by 3 columns
.offset-4	33.333%	Offset by 4 columns
.offset-5	41.667%	Offset by 5 columns
.offset-6	50%	Offset by 6 columns
.offset-7	58.333%	Offset by 7 columns
.offset-8	66.667%	Offset by 8 columns
.offset-9	75%	Offset by 9 columns
.offset-10	83.333%	Offset by 10 columns
.offset-11	91.667%	Offset by 11 columns

## Push/Pull Classes

Class	Description
.push-*	Push columns to the right
.pull-*	Pull columns to the left

## CSS Custom Properties

The Grid system uses standard CSS properties and doesn't rely on CSS custom properties. However, it's designed to work seamlessly with CSS custom properties for theming:

Property	Description	Default
--grid-gutter-width	Width of grid gutters	30px



Property	Description	Default
--grid-columns	Number of grid columns	12
--container-max-widths	Container max-widths	540px, 720px, 960px, 1140px
--grid-breakpoints	Breakpoint values	576px, 768px, 992px, 1200px

## Best Practices

### Layout Structure

- Container First : Always start with a container ( .container or .container-fluid )
- Row Wrapper : Wrap columns in a .row element
- Column Classes : Use appropriate column classes for desired widths
- Responsive Design : Use breakpoint-specific classes for mobile-first design

### Responsive Design

- Mobile First : Design for mobile devices first, then enhance for larger screens
- Breakpoint Strategy : Use consistent breakpoints across your application
- Progressive Enhancement : Start with basic layout, add complexity for larger screens
- Content Priority : Ensure important content is visible on all screen sizes

### Performance

- CSS Efficiency : Grid classes are optimized for performance
- Minimal Nesting : Avoid deeply nested grid structures when possible
- Semantic HTML : Use semantic HTML elements with grid classes
- Browser Support : Grid system works in all modern browsers

### Accessibility

- Logical Order : Ensure content flows logically regardless of visual order
- Screen Readers : Grid layout doesn't affect screen reader navigation
- Keyboard Navigation : Maintain logical tab order
- Focus Management : Ensure focus indicators are visible

### Content Organization

- Consistent Spacing : Use consistent gutters and spacing
- Content Hierarchy : Use grid to establish clear visual hierarchy
- Flexible Content : Design content to work across different column widths
- Responsive Images : Ensure images scale appropriately within grid columns

## Accessibility Guidelines

### Semantic Structure

- HTML Semantics : Use semantic HTML elements with grid classes
- Document Outline : Ensure proper heading hierarchy within grid layouts
- Landmark Roles : Use appropriate ARIA landmarks for major layout sections
- Content Flow : Maintain logical content flow regardless of visual layout

## Screen Reader Support

- Logical Order : Content should flow logically for screen readers
- Descriptive Labels : Use descriptive labels for interactive elements
- Skip Links : Provide skip links for navigation-heavy layouts
- Focus Indicators : Ensure focus indicators are visible and logical

## Keyboard Navigation

- Tab Order : Maintain logical tab order through grid layouts
- Focus Management : Ensure focus moves logically through content
- Keyboard Shortcuts : Provide keyboard shortcuts for complex layouts
- Escape Mechanisms : Allow users to escape from complex layouts

## Visual Design

- High Contrast : Ensure sufficient contrast ratios in grid layouts
- Color Independence : Don't rely solely on color for information
- Text Scaling : Support for text scaling and zoom
- Motion Sensitivity : Provide alternatives for users sensitive to motion

## Responsive Behavior

### Mobile Adaptations

The Grid system automatically adapts to mobile screens:

- Stacked Layout : Columns stack vertically on small screens
- Full Width : Single columns take full width on mobile
- Touch Optimization : Layouts are optimized for touch interaction
- Performance : Optimized performance for mobile devices

### Breakpoint Behavior

- Extra Small (0px+) : Single column layout, stacked content
- Small (576px+) : Multi-column layouts begin to appear
- Medium (768px+) : Tablet-optimized layouts
- Large (992px+) : Desktop layouts with full feature set
- Extra Large (1200px+) : Large desktop and wide screen layouts

## Content Considerations

- Flexible Images : Images scale appropriately within grid columns
- Text Readability : Text remains readable at all column widths
- Touch Targets : Interactive elements maintain appropriate touch target sizes

- Loading Performance : Layouts load efficiently on all devices